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DIALOG INFORMATION SERVICES

PLEASE LOGON:

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Dialog level 05.20.01D

Last logoff: 12dec07 09:27:47

Logon file1 12dec07 09:40:18

* * *

File 1:ERIC 1965-2007/Nov
(c) format only 2007 Dialog

Set	Items	Description
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Cost is in DialUnits

? b 410

12dec07 09:40:19	User293001	Session D4.1
\$0.47	0.133	DialUnits File1
\$0.47	Estimated cost	File1
\$0.47	Estimated cost this	search
\$0.47	Estimated total session cost	0.133 DialUnits

File 410:Dialog Comm.-of-Interest Newsletters 2007 /Feb
(c) 2007 Dialog

Set	Items	Description
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? set hi ;set hi

HIGHLIGHT set on as ''

HIGHLIGHT set on as ''

? sf allscience

>>>SELECT FILES not supported.

? b 411

12dec07 09:40:34	User293001	Session D4.2
\$0.00	0.228	DialUnits File410
\$0.06	Estimated cost	File410
\$0.06	TELNET	
\$0.06	Estimated cost this	search
\$0.53	Estimated total session cost	0.362 DialUnits

File 411:DIALINDEX(R)

DIALINDEX(R)
(c) 2007 Dialog

*** DIALINDEX search results display in an abbreviated ***

*** format unless you enter the SET DETAIL ON command. ***

? sf allscience

You have 298 files in your file list.

(To see banners, use SHOW FILES command)

? s (composition? or formulation?) and aminosilicone? and organosiloxane (4w) resin?

Your SELECT statement is:
s (composition? or formulation?) and aminosilicone? and organosiloxane
(4w) resin?

Items	File
Examed 50 files	
Examed 100 files	
Examed 150 files	
4	340: CLAIMS(R)/US Patent_1950-07/Dec 06
1	342: Derwent Patents Citation Indx_1978-07/200774
1	345: INFADOC/Family & Legal Stat_1968-2007/UD=200748
6	348: EUROPEAN PATENTS_1978-2007/ 200749
18	349: PCT FULLTEXT_1979-2007/UB=20071129UT=20071122
Examined 200 files	
Examined 250 files	
50	654: US PAT.FULL._1976-2007/DEC 11

6 files have one or more items; file list includes 298 files.

? rf
Your last SELECT statement was:
S (COMPOSITION? OR FORMULATION?) AND AMINOSILICONE? AND ORGANOSILOXANE -
(4W) RESIN?

Ref	Items	File
N1	50	654: US PAT.FULL._1976-2007/DEC 11
N2	18	349: PCT FULLTEXT_1979-2007/UB=20071129UT=20071122
N3	6	348: EUROPEAN PATENTS_1978-2007/ 200749
N4	4	340: CLAIMS(R)/US Patent_1950-07/Dec 06
N5	1	342: Derwent Patents Citation Indx_1978-07/200774
N6	1	345: INFADOC/Family & Legal Stat_1968-2007/UD=200748
N7	0	2: INSPEC_1898-2007/Nov W4
N8	0	5: Biosis Previews(R)_1926-2007/Dec W1
N9	0	6: NTIS_1964-2007/Dec W4
N10	0	8: Ei Compendex(R)_1884-2007/Dec W1

6 files have one or more items; file list includes 298 files.

- Enter P or PAGE for more -

? b n1:n6
12dec07 09:49:31 User293001 Session D4.3
\$16.92 5.755 DialUnits File411
\$16.92 Estimated cost File411
\$2.40 TELNET
\$19.32 Estimated cost this search
\$19.85 Estimated total session cost 6.117 DialUnits

SYSTEM:OS - DIALOG OneSearch
File 654:US PAT.FULL. 1976-2007/DEC 11
(c) Format only 2007 Dialog
*File 654: IPCR/8 classification codes now searchable in 2006 records.
For information about IC= index changes, see HELP NEWSIPCR.
File 349:PCT FULLTEXT 1979-2007/UB=20071129UT=20071122
(c) 2007 WIPO/Thomson
*File 349: For important information about IPCR/8 and forthcoming
changes to the IC= index, see HELP NEWSIPCR.
File 348:EUROPEAN PATENTS 1978-2007/ 200749
(c) 2007 European Patent Office
*File 348: For important information about IPCR/8 and forthcoming
changes to the IC= index, see HELP NEWSIPCR.
File 340:CLAIMS(R)/US Patent 1950-07/Dec 06

(c) 2007 IFI/CLAIMS(R)
*File 340: The 2006 reload is online as of December 1, 2006.
IPCR/8 is available.
File 342:Derwent Patents Citation Indx 1978-07/200774
(c)2007 The Thomson Corp.
File 345:INPADOC/Family & Legal Stat 1968-2007/UD=200748
*File 345: August 27, 2007 - reloaded with new and enhanced content.
See HELP NEWS 345 for details.

Set	Items	Description
? s	(composition? or formulation?) and aminosilicone? and organosiloxane (4w) resin?	Processing
Processing	3191951	COMPOSITION?
	733870	FORMULATION?
	1599	AMINOSILICONE?
	34391	ORGANOSILOXANE
	1941862	RESIN?
	2998	ORGANOSILOXANE(4W)RESIN?
S1	80	(COMPOSITION? OR FORMULATION?) AND AMINOSILICONE? AND ORGANOSILOXANE (4W) RESIN?

? rd

>>>Duplicate detection is not supported for File 654.

>>>Duplicate detection is not supported for File 349.

>>>Duplicate detection is not supported for File 348.

>>>Duplicate detection is not supported for File 340.

>>>Duplicate detection is not supported for File 342.

>>>Duplicate detection is not supported for File 345.

>>>All specified files are unsupported, command ignored.

? s	s1	and anhydrous
	80	S1
	306528	ANHYDROUS
S2	32	S1 AND ANHYDROUS

? s s1 and volatile

	80	S1
	573407	VOLATILE
S3	58	S1 AND VOLATILE

? s s2 and volatile

	32	S2
	573407	VOLATILE
S4	29	S2 AND VOLATILE

? s s4 and resin

	29	S4
	1707896	RESIN
S5	29	S4 AND RESIN

? s s5 and cosmetic

	29	S5
	183901	COSMETIC
S6	15	S5 AND COSMETIC

? d s5/3/1-29

Display 5/3/1 (Item 1 from file: 654)

DIALOG(R)File 654:US PAT.FULL.

(c) Format only 2007 Dialog. All rts. reserv.

7265236

UTILITY

COMPOSITIONS AND METHODS FOR USING POLYMERIC SUDS ENHANCERS

Inventor: SIVIK, Mark Robert, Mason, OH, US

Bodet, Jean-Francois, Mason, OH, US

William, Bernard, Harrison, OH, US

Scheper, William Michael, Lawrenceburg, IN, US

Yeung, Dominic Wai-Kwing, Mississauga, CA

Bergeron, Vance, Antony, FR

Assignee: THE PROCTER & GAMBLE COMPANY, (02), Cincinnati, OH, US

RHODIA INC., (02), Cranbury, NJ, US

Correspondence Address: STEVENS DAVIS MILLER & MOSHER, LLP, 1615 L STREET, NW, SUITE 850, WASHINGTON, DC, 20036, US

Publication Number	Kind	Date	Application Number	Filing Date
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-more-

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Display 5/3/1 (Item 1 from file: 654)

DIALOG(R)File 654:US PAT.FULL.

(c) Format only 2007 Dialog. All rts. reserv.

Main Patent	US 20070244027	A1	20071018	US 2007764633	20070618
Division	US 7241729			US 2004921324	20040819
Continuation	ABANDONED			US 2000699522	20001030
CIP	ABANDONED			US 99320235	19990526

Fulltext Word Count: 33314

- end of record -

?

Display 5/3/2 (Item 2 from file: 654)

DIALOG(R)File 654:US PAT.FULL.

(c) Format only 2007 Dialog. All rts. reserv.

7128970

UTILITY

Compositions and methods for using polymeric suds enhancers

Inventor: Sivik, Mark Robert, Mason, OH, US

Bodet, Jean-Francois, Mason, OH, US

Kluesener, Bernard William, Harrison, OH, US

Scheper, William Michael, Lawrenceburg, IN, US

Yeung, Dominic Wai-Kwing, Mississauga, CA

Bergeron, Vance, Antony, FR

Assignee: Rhodia Inc., (02), Cranbury, NJ, US

The Procter & Gamble Company, (02), Cincinnati, OH, US

Examiner: Hardee, John R.

Legal Representative: Stevens, Davis, Miller & Mosher, LLP

Publication Number	Kind	Date	Application Number	Filing Date
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Display 5/3/2 (Item 2 from file: 654)

DIALOG(R)File 654:US PAT.FULL.

(c) Format only 2007 Dialog. All rts. reserv.

Main Patent	US 7241729	B2	20070710	US 2004921324	20040819
Related Publ	US 20050026803	A1	20050203		

Continuation PENDING US 2000699522 20001030
CIP ABANDONED US 99320235 19990526

Disclaimer: This patent is subject to a terminal disclaimer.

Fulltext Word Count: 31948

- end of record -

?
Display 5/3/3 (Item 3 from file: 654)
DIALOG(R)File 654:US PAT.FULL.
(c) Format only 2007 Dialog. All rts. reserv.

7057542 **IMAGE Available
UTILITY
Laundry system having unitized dosing
Inventor: Caswell, Debra Sue, Beijing, CN
Welch, Robert Gary, Mason, OH, US
Ridyard, Mark William, Heaton, GB
Sayers, Edward, North Shields, GB
York, David William, Ponteland, GB
Dufton, Daniel James, Newcastle upon Tyne, GB
Howe, Simon, South Shields, GB
Eshuis, Johan, Antwerp, BE
Pena-Romero, Angelina, Tervuren, BE
Laudamiel-Pellet, Christophe, New York, NY, US
Hoffmann, Wundriari, Frimley, GB
Deckner, George Endel, Cincinnati, OH, US
Wahl, Errol Hoffman, Cincinnati, OH, US

-more-

?
Display 5/3/3 (Item 3 from file: 654)
DIALOG(R)File 654:US PAT.FULL.
(c) Format only 2007 Dialog. All rts. reserv.
Murphy, Ruth Anne, Cincinnati, OH, US
Hensley, Charles Albert, Cincinnati, OH, US
Hensley, Betty Jean, Cincinnati, OH, US
Trinh, Toan, Maineville, OH, US
Dihora, Jiten Odhavji, Hamilton, OH, US
Baker, Ellen Schmidt, Cincinnati, OH, US
Littig, Janet Sue, Fairfield, OH, US
Schroeder, Timothy James, Mason, OH, US
Diersing, Steven Louis, Cincinnati, OH, US
Dodd, Malcolm McLaren, Gateshead, GB
Gallon, Lois Sara, Cincinnati, OH, US

Assignee: Unassigned
Correspondence Address: THE PROCTER & GAMBLE COMPANY; INTELLECTUAL PROPERTY
DIVISION, WINTON HILL BUSINESS CENTER - BOX 161, 6110 CENTER HILL
AVENUE, CINCINNATI, OH, 45224, US

Publication Application Filing

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Display 5/3/3 (Item 3 from file: 654)
DIALOG(R)File 654:US PAT.FULL.
(c) Format only 2007 Dialog. All rts. reserv.
Number Kind Date Number Date
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Main Patent US 20070111918 Al 20070517 US 2006396521 20060403
Continuation PENDING US 2006387875 20060324

Continuation	US 7091171	US 2005121876	20050504
Continuation	US 7166565	US 2005105798	20050414
Continuation	US 7056877	US 2004925749	20040825
Continuation	ABANDONED	US 2001838867	20010420
Provisional		US 60-203472	20000511

Fulltext Word Count: 64456

- end of record -

?
Display 5/3/4 (Item 4 from file: 654)
DIALOG(R)File 654:US PAT.FULL.
(c) Format only 2007 Dialog. All rts. reserv.

6958613
UTILITY
Laundry system having unitized dosing
Inventor: Caswell, Debra Sue, Beijing, CN
Welch, Robert Gary, Mason, OH, US
Ridyard, Mark William, Newcastle upon Tyne, GB
Sayers, Edward, North Shields, GB
York, David William, Newcastle upon Tyne, GB
Dufton, Daniel James, Newcastle upon Tyne, GB
Howe, Simon, South Shields, GB
Eshuis, Johan, Antwerp, BE
Pena-Romero, Angelina, Tervuren, BE
Laudamiel-Pellet, Christophe, New York, NY, US
Hoffmann, Wundriari, Surrey, GB
Deckner, George Endel, Cincinnati, OH, US
Wahl, Errol Hoffman, Cincinnati, OH, US

-more-

?
Display 5/3/4 (Item 4 from file: 654)
DIALOG(R)File 654:US PAT.FULL.
(c) Format only 2007 Dialog. All rts. reserv.
Murphy, Ruth Anne, Cincinnati, OH, US
Hensley, legal representative, Betty Jean, Cincinnati, OH, US
Trinh, Toan, Maineville, OH, US
Dihora, Jiten Odhavji, Hamilton, OH, US
Baker, Ellen Schmidt, Cincinnati, OH, US
Littig, Janet Sue, Fairfield, OH, US
Schroeder, Timothy James, Mason, OH, US
Diersing, Steven Louis, Cincinnati, OH, US
Dodd, Malcolm McLaren, Gateshead, GB
Gallon, Lois Sara, Cincinnati, OH, US
Hensley, deceased, Charles Albert, deceased
Assignee: The Procter & Gamble Company, (02), Cincinnati, OH, US
Examiner: Hardee, John R.
Legal Representative: Charles, Mark A.; Upite, David V.; Zerby, Kim William

Publication Number	Kind	Date	Application Number	Filing Date
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Display 5/3/4 (Item 4 from file: 654)
DIALOG(R)File 654:US PAT.FULL.
(c) Format only 2007 Dialog. All rts. reserv.

Main Patent	US 7186680	B2	20070306	US 2006337877	20060123
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Related Publ	US 20060123557	A1	20060615		
Continuation	US 7091171	A		US 2005121876	20050504
Continuation	PENDING			US 2005105798	20050414
Continuation	US 7056877	A		US 2004925749	20040825
Continuation	ABANDONED			US 2001838867	20010420
Provisional				US 60-203472	20000511

US Term Extension: 4 days

Fulltext Word Count: 64319

- end of record -

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Set	Items	Description
S1	80	(COMPOSITION? OR FORMULATION?) AND AMINOSILICONE? AND ORGANOSILOXANE (4W) RESIN?
S2	32	S1 AND ANHYDROUS
S3	58	S1 AND VOLATILE
S4	29	S2 AND VOLATILE
S5	29	S4 AND RESIN
S6	15	S5 AND COSMETIC

? d s6/3/1-15

Display 6/3/1 (Item 1 from file: 654)

DIALOG(R)File 654:US PAT.FULL.

(c) Format only 2007 Dialog. All rts. reserv.

7265236

UTILITY

COMPOSITIONS AND METHODS FOR USING POLYMERIC SUDS ENHANCERS

Inventor: SIVIK, Mark Robert, Mason, OH, US

Bodet, Jean-Francois, Mason, OH, US

William, Bernard, Harrison, OH, US

Scheper, William Michael, Lawrenceburg, IN, US

Yeung, Dominic Wai-Kwing, Mississauga, CA

Bergeron, Vance, Antony, FR

Assignee: THE PROCTER & GAMBLE COMPANY, (02), Cincinnati, OH, US

RHODIA INC., (02), Cranbury, NJ, US

Correspondence Address: STEVENS DAVIS MILLER & MOSHER, LLP, 1615 L STREET, NW, SUITE 850, WASHINGTON, DC, 20036, US

Publication Number	Kind	Date	Application Number	Filing Date
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Display 6/3/1 (Item 1 from file: 654)

DIALOG(R)File 654:US PAT.FULL.

(c) Format only 2007 Dialog. All rts. reserv.

Main Patent	US 20070244027	A1	20071018	US 2007764633	20070618
Division	US 7241729			US 2004921324	20040819
Continuation	ABANDONED			US 2000699522	20001030
CIP	ABANDONED			US 99320235	19990526

Fulltext Word Count: 33314

- end of record -

?

Display 6/3/2 (Item 2 from file: 654)

DIALOG(R)File 654:US PAT.FULL.

(c) Format only 2007 Dialog. All rts. reserv.

7128970

UTILITY

Compositions and methods for using polymeric suds enhancers

Inventor: Sivik, Mark Robert, Mason, OH, US

Bodet, Jean-Francois, Mason, OH, US

Kluesener, Bernard William, Harrison, OH, US

Scheper, William Michael, Lawrenceburg, IN, US

Yeung, Dominic Wai-Kwing, Mississauga, CA

Bergeron, Vance, Antony, FR

Assignee: Rhodia Inc., (02), Cranbury, NJ, US

The Procter & Gamble Company, (02), Cincinnati, OH, US

Examiner: Hardee, John R.

Legal Representative: Stevens, Davis, Miller & Mosher, LLP

Publication Number	Kind	Date	Application Number	Filing Date
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? Display 6/3/2 (Item 2 from file: 654)

DIALOG(R)File 654:US PAT.FULL.

(c) Format only 2007 Dialog. All rts. reserv.

Main Patent	US 7241729	B2	20070710	US 2004921324	20040819
Related Publ	US 20050026803	A1	20050203		
Continuation	PENDING			US 2000699522	20001030
CIP	ABANDONED			US 99320235	19990526

Disclaimer: This patent is subject to a terminal disclaimer.

Fulltext Word Count: 31948

- end of record -

? Display 6/3/3 (Item 3 from file: 654)

DIALOG(R)File 654:US PAT.FULL.

(c) Format only 2007 Dialog. All rts. reserv.

6132658

Derwent Accession: 2005-417054

UTILITY

Compositions and methods for using zwitterionic polymeric suds enhancers

Inventor: Sivik, Mark Robert, Mitchell, KY, US

Bodet, Jean-Francois, Mason, OH, US

Kluesener, Bernard William, Harrison, OH, US

Scheper, William Michael, Lawrenceburg, IN, US

Yeung, Dominic Wai-Kwing, Mississauga, CA

Bergeron, Vance, Lyon, FR

Assignee: The Procter & Gamble Company, (02), Cincinnati, OH, US

Rhodia Inc., (02), Cranbury, NJ, US

Correspondence Address: STEVENS DAVIS MILLER & MOSHER, LLP, 1615 L STREET, NW, SUITE 850, WASHINGTON, DC, 20036, US

-more-

? Display 6/3/3 (Item 3 from file: 654)

DIALOG(R)File 654:US PAT.FULL.

(c) Format only 2007 Dialog. All rts. reserv.

Publication	Application	Filing
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	Number	Kind	Date	Number	Date
Main Patent	US 20050124738	A1	20050609	US 2004995194	20041124
Continuation	ABANDONED			US 2000702084	20001030
CIP	ABANDONED			US 99320834	19990526

Fulltext Word Count: 27937

- end of record -

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Display 6/3/4 (Item 4 from file: 654)
 DIALOG(R)File 654:US PAT.FULL.
 (c) Format only 2007 Dialog. All rts. reserv.

5976661
 Derwent Accession: 2005-141402
 UTILITY
 Compositions and methods for using polymeric suds enhancers
 Inventor: Sivik, Mark Robert, Mason, OH, US
 Bodet, Jean-Francois, Mason, OH, US
 Kluesener, Bernard William, Harrison, OH, US
 Scheper, William Michael, Lawrenceburg, IN
 Yeung, Dominic Wai-Kwing, Mississauga, CA
 Bergeron, Vance, Antony, FR
 Assignee: THE PROCTER & GAMBLE COMPANY, (02), Cincinnati, OH, 45253-8707,
 US
 Correspondence Address: STEVENS DAVIS MILLER & MOSHER, LLP, 1615 L STREET,
 NW, SUITE 850, WASHINGTON, DC, 20036, US

Publication	Application	Filing
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Display 6/3/4 (Item 4 from file: 654)
 DIALOG(R)File 654:US PAT.FULL.
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	Number	Kind	Date	Number	Date
Main Patent	US 20050026803	A1	20050203	US 2004921324	20040819
Continuation	ABANDONED			US 2000699522	20001030
CIP	ABANDONED			US 99320235	19990526

Fulltext Word Count: 33172

- end of record -

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Display 6/3/5 (Item 5 from file: 654)
 DIALOG(R)File 654:US PAT.FULL.
 (c) Format only 2007 Dialog. All rts. reserv.

5975652
 Derwent Accession: 2007-351406
 UTILITY
 Anhydrous, transfer-resistant cosmetic lip compositions
 Inventor: Bekele, Haimanot, Baltimore, MD, US
 Davison, Claire, Baltimore, MD, US
 Wagstaff, Qadira Tayyiba, Baltimore, MD, US
 Noell, Catherine Joyce, Cincinnati, OH, US
 Assignee: The Procter & Gamble Company, (02)
 Correspondence Address: THE PROCTER & GAMBLE COMPANY; INTELLECTUAL PROPERTY

DIVISION, WINTON HILL TECHNICAL CENTER - BOX 161, 6110 CENTER HILL
AVENUE, CINCINNATI, OH, 45224, US

Publication Number	Kind	Date	Application Number	Filing Date
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Display 6/3/5 (Item 5 from file: 654)
DIALOG(R)File 654:US PAT.FULL.
(c) Format only 2007 Dialog. All rts. reserv.
Main Patent US 20050025793 A1 20050203 US 2004824118 20040414
Provisional US 60-462866 20030414

Fulltext Word Count: 4793

- end of record -

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Display 6/3/6 (Item 6 from file: 654)
DIALOG(R)File 654:US PAT.FULL.
(c) Format only 2007 Dialog. All rts. reserv.

5957461
Derwent Accession: 2004-804432
UTILITY
Anhydrous, silicone modified fluorinated polymers for
transfer-resistant cosmetic lip compositions
Inventor: Smith, Steven Daryl, Fairfield, OH, US
Underiner, Todd Laurence, Cincinnati, OH, US
Assignee: The Procter & Gamble Company, (02)
Correspondence Address: THE PROCTER & GAMBLE COMPANY;INTELLECTUAL PROPERTY
DIVISION, WINTON HILL TECHNICAL CENTER - BOX 161, 6110 CENTER HILL
AVENUE, CINCINNATI, OH, 45224, US

Publication Number	Kind	Date	Application Number	Filing Date
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Main Patent US 20050013785 A1 20050120 US 2004824128 20040414

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Display 6/3/6 (Item 6 from file: 654)
DIALOG(R)File 654:US PAT.FULL.
(c) Format only 2007 Dialog. All rts. reserv.
Provisional US 60-462866 20030414

Fulltext Word Count: 5464

- end of record -

?
Display 6/3/7 (Item 1 from file: 349)
DIALOG(R)File 349:PCT FULLTEXT
(c) 2007 WIPO/Thomson. All rts. reserv.

01171680
ANHYDROUS, SILICONE MODIFIED FLOURINATED POLYMERS FOR
TRANSFER-RESISTANT COSMETIC LIP COMPOSITIONS
POLYMERES FLUORES MODIFIES PAR LA SILICONE, ANHYDRES DESTINES A DES
COMPOSITIONS COSMETIQUES POUR LES LEVRES RESISTANT AU TRANSFERT

Patent Applicant/Assignee:

THE PROCTER & GAMBLE COMPANY, One Procter & Gamble Plaza, Cincinnati,
Ohio 45202, US, US (Residence), US (Nationality), (For all designated
states except: US)

Patent Applicant/Inventor:

SMITH Steven Daryl, 5238 Concord Mill Place, Fairfield, Ohio 45014, US,
US (Residence), US (Nationality), (Designated only for: US)
UNDERINER Todd Laurence, 6264 Seiler Drive, Cincinnati, Ohio 45239, US,
US (Residence), US (Nationality), (Designated only for: US)

Legal Representative:

THE PROCTER & GAMBLE COMPANY (commercial rep.), c/o T. David Reed, 6110

-more-

? Display 6/3/7 (Item 1 from file: 349)
DIALOG(R)File 349:PCT FULLTEXT

(c) 2007 WIPO/Thomson. All rts. reserv.
Center Hill Road, Cincinnati, Ohio 45224, US,

Patent and Priority Information (Country, Number, Date):

Patent: WO 200491560 A2 20041028 (WO 0491560)

Application: WO 2004US11976 20040414 (PCT/WO US04011976)

Priority Application: US 2003462862 20030414

Designated States:

(All protection types applied unless otherwise stated - for applications
2004+)

AE AG AL AM AT AU AZ BA BB BG BR BW BY BZ CA CH CN CO CR CU CZ DE DK DM
DZ EC EE EG ES FI GE GD GE GH GM HH HU ID IL IN IS JP KE KG KP KR KZ LC
LK LR LS LT LU LV MA MD MG MK MN MW MX MZ NA NI NO NZ OM PG PH PL PT RO
RU SC SD SE SG SK SL SY TJ TM TN TR TT TZ UA UG US UZ VC VN YU ZA ZM ZW
(EP) AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HU IE IT LU MC NL PL PT RO
SE SI SK TR

(OA) BF BJ CF CG CI CM GA GN GQ GW ML MR NE SN TD TG

(AP) BW GH GM KE LS MW MZ SD SL SZ TZ UG ZM ZW

(EA) AM AZ BY KG KZ MD RU TJ TM

-more-

? Display 6/3/7 (Item 1 from file: 349)
DIALOG(R)File 349:PCT FULLTEXT

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Publication Language: English

Filing Language: English

Fulltext Word Count: 5507

- end of record -

? Display 6/3/8 (Item 2 from file: 349)
DIALOG(R)File 349:PCT FULLTEXT

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01171679

ANHYDROUS, TRANSFER-RESISTANT COSMETIC LIP COMPOSITIONS

COMPOSITIONS COSMETIQUES ANHYDRES POUR LES LEVRES, RESISTANT AU

TRANSFERT

Patent Applicant/Assignee:

THE PROCTER & GAMBLE COMPANY, One Procter & Gamble Plaza, Cincinnati,
Ohio 45202, US, US (Residence), US (Nationality), (For all designated
states except: US)

NOELL Catherine Joyce, 3225 Deborah Lane, Cincinnati, Ohio 45239, US, US
(Residence), US (Nationality), (For all designated states except: US)

Patent Applicant/Inventor:

BEKELE Haimanot, 2614 Observatory Avenue, #2, Cincinnati, Ohio 45208, US,

US (Residence), ET (Nationality), (Designated only for: US)
DAVISON Clair, 2809 Boston Street, 230, Baltimore, Maryland 21224, US, US
(Residence), GB (Nationality), (Designated only for: US)
WAGSTAFF Qadira Tayyiba, 6557 Woodgreen Circle, Baltimore, Maryland 21207

-more-

? Display 6/3/8 (Item 2 from file: 349)
DIALOG(R)File 349:PCT FULLTEXT
(c) 2007 WIPO/Thomson. All rts. reserv.
, US, US (Residence), US (Nationality), (Designated only for: US)
Legal Representative:
THE PROCTER & GAMBLE COMPANY (commercial rep.), c/o T. David Reed, 6110
Center Hill Road, Cincinnati, Ohio 45224, US,
Patent and Priority Information (Country, Number, Date):
Patent: WO 200491559 A2-A3 20041028 (WO 0491559)
Application: WO 2004US11975 20040414 (PCT/WO US04011975)
Priority Application: US 2003462866 20030414
Designated States:
All protection types applied unless otherwise stated - for applications
2004+)
AE AG AL AM AT AU AZ BA BB BG BR BW BY BZ CA CH CN CO CR CU CZ DE DK DM
DE EC EE EG ES FI GB GD GE GH GM HR HU ID IL IN IS JP KE KG KP KR KZ LC
LK LR LS LT LU LV MA MD MG MK MN MW MX MZ NA NI NO NZ OM PG PH PL PT RO
RU SC SD SE SG SK SL SY TJ TM TN TR TT TZ UA UG US UZ VC VN YU ZA ZM ZW
(EP) AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HU IE IT LU MC NL PL PT RO
SE SI SK TR

-more-

? Display 6/3/8 (Item 2 from file: 349)
DIALOG(R)File 349:PCT FULLTEXT
(c) 2007 WIPO/Thomson. All rts. reserv.
(OA) BF BJ CF CG CI CM GA GN GQ GW ML MR NE SN TD TG
(AP) BW GH GN KZ LS MW MZ SD SL SZ TZ UG ZM ZW
(EA) AM AZ BY KG KZ MD RU TJ TM
Publication Language: English
Filing Language: English
Fulltext Word Count: 5183

- end of record -

? Display 6/3/9 (Item 3 from file: 349)
DIALOG(R)File 349:PCT FULLTEXT
(c) 2007 WIPO/Thomson. All rts. reserv.
00759330
COMPOSITIONS AND METHODS FOR USING POLYMERIC SUDS ENHANCERS
COMPOSITIONS ET PROCEDES D'UTILISATION D'ACTIVATEURS POLYMERES DE
MOUSSE
Patent Applicant/Assignee:
THE PROCTER & GAMBLE COMPANY, One Procter & Gamble Plaza, Cincinnati, OH
45202, US, US (Residence), US (Nationality)
RHODIA INC, 3265 Wolfedale Road, Mississauga, Ontario L5C 1V8, CA, CA
(Residence), CA (Nationality)
Inventor(s):
SIVIK Mark Robert, 2434 Sheffield Court, Ft. Mitchell, KY 41014, US
BODET Jean-Francois, 5067 Plantation Court, Mason, OH 45040, US
KLUESENER Bernard William, 11619 New Biddinger Road, Harrison, OH 45030,
US
SCHEPER William Michael, 2393 Picnic Woods Drive, Lawrenceburg, IN 47025,
US

-more-

? Display 6/3/9 (Item 3 from file: 349)
DIALOG(R)File 349:PCT FULLTEXT
(c) 2007 WIPO/Thomson. All rts. reserv.
BERGERON Vance, 70 Rue Cmdt. Charcot, F-69005 Lyon, FR
YEUNG Dominic Wai-Kwing, 3661 Golden Orchard Drive, Mississauga, Ontario
L4Y 3J2, CA

Legal Representative:

REED T David, The Procter & Gamble Company, 5299 Spring Grove Avenue,
Cincinnati, OH 45217-1087, US

Patent and Priority Information (Country, Number, Date):

Patent: WO 200071241 A1 200001130 (WO 0071241)

Application: WO 2000US14408 200000525 (PCT/WO US0014408)

Priority Application: US 99320235 19990526

Designated States:

(Protection type is "patent" unless otherwise stated - for applications
prior to 2004)

AE AL AM AT AT (utility model) AU AZ BA BB BG BR BY CA CH CN CR CU CZ CZ
(utility model) DE DE (utility model) DK DK (utility model) DM EE EE
(utility model) ES FI FI (utility model) GB GD GE GH GM HR HU ID IL IN IS
JP KE KG KP KR KZ LC LK LR LS LT LU LV MA MD MG MK MN MW MX NO NZ PL PT

-more-

? Display 6/3/9 (Item 3 from file: 349)
DIALOG(R)File 349:PCT FULLTEXT
(c) 2007 WIPO/Thomson. All rts. reserv.
RO RU SD SE SG SI SK SK (utility model) SL TJ TM TR TT TZ UA UG UZ VN YU
ZA ZW
(EP) AT BE CH CY DE DK ES FI FR GB GR IE IT LU MC NL PT SE
(OA) BF BJ CF CG CI CM GA GN GW ML MR NE SN TD TG
(AP) GH GM KE LS MW MZ SD SL SZ TZ UG ZW
(EA) AM AZ BY KG KZ MD RU TJ TM

Publication Language: English

Filing Language: English

Fulltext Word Count: 36209

- end of record -

? Display 6/3/10 (Item 4 from file: 349)
DIALOG(R)File 349:PCT FULLTEXT
(c) 2007 WIPO/Thomson. All rts. reserv.

00759329
COMPOSITIONS AND METHODS FOR USING ZWITTERIONIC POLYMERIC SUDS
ENHANCERS
COMPOSITIONS ET PROCEDES PERMETTANT D'UTILISER DES ACTIVATEURS
POLYMERES ZWITTERIONIQUES D'EAU SAVONNEUSE

Patent Applicant/Assignee:

THE PROCTER & GAMBLE COMPANY, One Procter & Gamble Plaza, Cincinnati, OH
45202, US, US (Residence), US (Nationality)
RHODIA INC, 3265 Wolfendale Road, Mississauga, Ontario L5C 1V8, CA, CA
(Residence), CA (Nationality)

Inventor(s):

SIVIK Mark Robert, 2434 Sheffield Court, Ft. Mitchell, KY 41014, US
BODET Jean-Francois, 5067 Plantation Court, Mason, OH 45040, US
KLUESENER Bernard William, 11619 New Biddinger Road, Harrison, OH 45030,
US
SCHEPER William Michael, 2393 Picnic Woods Drive, Lawrenceburg, IN 47025,

-more-

? Display 6/3/10 (Item 4 from file: 349)
DIALOG(R)File 349:PCT FULLTEXT

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US

BERGERON Vance, 70 Rue Cmdt. Charcot, F-69005 Lyon, FR
YEUNG Dominic Wai-Kwing, 3661 Golden Orchard Drive, Mississauga, Ontario
L4Y 3J2, CA

Legal Representative:

REED T David, The Procter & Gamble Company, 5299 Spring Grove Avenue,
Cincinnati, OH 45217-1087, US

Patent and Priority Information (Country, Number, Date):

Patent: WO 200071240 A1 200001130 (WO 0071240)

Application: WO 2000US14407 200000525 (PCT/WO US0014407)

Priority Application: US 99320834 19990526

Designated States:

(Protection type is "patent" unless otherwise stated - for applications
prior to 2004)

AE AL AM AT AT (utility model) AU AZ BA BB BG BR BY CA CH CN CR CU CZ CZ
(utility model) DE DE (utility model) DK DK (utility model) DM EE EE
(utility model) ES FI FI (utility model) GB GD GE GH GM HR HU ID IL IN IS

-more-

? Display 6/3/10 (Item 4 from file: 349)
DIALOG(R)File 349:PCT FULLTEXT

(c) 2007 WIPO/Thomson. All rts. reserv.

JP KE KG KP KR KZ LC LK LR LS LT LU LV MA MD MG MK MN MW MX NO NZ PL PT
RO RU SD SE SG SI SK SK (utility model) SL TJ TM TR TT TZ UA UG UZ VN YU
ZA ZW

(EP) AT BE CH CY DE DK ES FI FR GB GR IE IT LU MC NL PT SE
(OA) BF BJ CF CG CI CM GA GN GW ML MR NE SN TD TG

(AP) GH GM KE LS MW MZ SD SL SZ TZ UG ZW

(EA) AM AZ BY KG KZ MD RU TJ TM

Publication Language: English

Filing Language: English

Fulltext Word Count: 31124

- end of record -

? Display 6/3/11 (Item 1 from file: 348)
DIALOG(R)File 348:EUROPEAN PATENTS

(c) 2007 European Patent Office. All rts. reserv.

01236935

COMPOSITIONS AND METHODS FOR USING ZWITTERIONIC POLYMERIC SUDS
ENHANCERS

ZUSAMMENSETZUNGEN UND VERWENDUNGSVERFAHREN VON ZWITTERIONISCHEN POLYMEREN
SCHAUMBILDERN

COMPOSITIONS ET PROCEDES PERMETTANT D'UTILISER DES ACTIVATEURS
POLYMERES ZWITTERIONIQUES D'EAU SAVONNEUSE

PATENT ASSIGNEE:

THE PROCTER & GAMBLE COMPANY, (200173), One Procter & Gamble Plaza,
Cincinnati, Ohio 45202, (US), (Applicant designated States: all)
Rhodia, Inc., (3183160), 3265 Wolfendale Road, Mississauga, Ontario L5C
L8, (CA), (Applicant designated States: all)

INVENTOR:

SIVIK, Mark, Robert, 4424 Village Ridge Drive, Mason, Ohio 45040 County
of Warren, (US)

BODET, Jean-Francois, 5067 Plantation Court, Mason, OH 45040, (US)

-more-

? Display 6/3/11 (Item 1 from file: 348)
DIALOG(R)File 348:EUROPEAN PATENTS
(c) 2007 European Patent Office. All rts. reserv.
KLUESENER, Bernard, William, 11619 New Biddinger Road, Harrison, OH 45030
(US)
SCHEPER, William, Michael, 2393 Picnic Woods Drive, Lawrenceburg, IN
47025, (US)
BERGERON, Vance, 118 rue de Saint Exupery, F-92160 Antony, (FR)
YEUNG, Dominic, Wai-Kwing, 3661 Golden Orchard Drive, Mississauga,
Ontario L4Y 3J2, (CA)
LEGAL REPRESENTATIVE:
Goodier, Claire et al (95204), N.V.Procter & Gamble Services Company S.A.
Temselaan 100, B-1853 Strombeek-Bever, (BE)
PATENT (CC, No, Kind, Date): EP 1180061 A1 020220 (Basic)
WO 200071240 001130
APPLICATION (CC, No, Date): EP 2000932772 000525; WO 2000US14407 000525
PRIORITY (CC, No, Date): US 320834 990526
DESIGNATED STATES: AT; BE; CH; CY; DE; DK; ES; FI; FR; GB; GR; IE; IT; LI;
LU; MC; NL; PT; SE
EXTENDED DESIGNATED STATES: AL; LT; LV; MK; RO; SI

-more-

? Display 6/3/11 (Item 1 from file: 348)
DIALOG(R)File 348:EUROPEAN PATENTS
(c) 2007 European Patent Office. All rts. reserv.
INTERNATIONAL PATENT CLASS (V7): B01F-017/00; C11D-003/37; A01N-025/16;
C09K-007/08; A62D-001/00; C11D-003/00
NOTE:

No A-document published by EPO
LANGUAGE (Publication,Procedural,Application): English; English; English
FULLTEXT AVAILABILITY:
Available Text Language Update Word Count
CLAIMS B (English) 200652 507
CLAIMS B (German) 200652 503
CLAIMS B (French) 200652 617
SPEC B (English) 200652 20638
Total word count - document A 0
Total word count - document B 22265
Total word count - documents A + B 22265

- end of record -

? Display 6/3/12 (Item 1 from file: 340)
DIALOG(R)File 340:CLAIMS(R)/US Patent
(c) 2007 IFI/CLAIMS(R). All rts. reserv.

10787086 2005-0025793 2005-0005938
C/ANHYDROUS, TRANSFER-RESISTANT COSMETIC LIP COMPOSITIONS
; MIXTURE OF AMINOSILICONES, CARBOXY MODIFIED SILICONES, AND/OR
EPOXY MODIFIED SILICONES; POLYSILOXANE AND VOLATILE CARRIER;
THICKENERS, BUILDERS; DURABILITY
Inventors: Bekele Haimanot (US); Davison Claire (US); Noell Catherine Joyce
(US); Wagstaff Qadira Tayyiba (US)
Assignee: Procter & Gamble Co The
Assignee Code: 68128
Attorney, Agent or Firm: THE PROCTER & GAMBLE COMPANY;INTELLECTUAL PROPERTY
DIVISION, WINTON HILL TECHNICAL CENTER-BOX 161, 6110 CENTER HILL AVENUE
, CINCINNATI, OH, 45224, US

Publication Number	Kind Date	Application Number	Date
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Display 6/3/12 (Item 1 from file: 340)
 DIALOG(R)File 340:CLAIMS(R)/US Patent
 (c) 2007 IFI/CLAIMS(R). All rts. reserv.
 US 20050025793 A1 20050203 US 2004824118 20040414
 Priority Applic: US 2004824118 20040414
 Provisional Applic: US 60-462866 20030414

- end of record -

?

Display 6/3/13 (Item 2 from file: 340)
 DIALOG(R)File 340:CLAIMS(R)/US Patent
 (c) 2007 IFI/CLAIMS(R). All rts. reserv.

10775079 2005-0013785 2005-0003158
 C/ANHYDROUS, SILICONE MODIFIED FLUORINATED POLYMERS FOR
 TRANSFER-RESISTANT COSMETIC LIP COMPOSITIONS; LONG LASTING,
 FRESH LOOK; PLEASURABLE FEEL; SINGLE STEP APPLICATION
 Inventors: Smith Steven Daryl (US); Underiner Todd Laurence (US)
 Assignee: Procter & Gamble Co The
 Assignee Code: 68128
 Attorney, Agent or Firm: THE PROCTER & GAMBLE COMPANY; INTELLECTUAL PROPERTY
 DIVISION, WINTON HILL TECHNICAL CENTER-BOX 161, 6110 CENTER HILL AVENUE
 , CINCINNATI, OH, 45224, US

Publication Number	Kind Date	Application Number	Date
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Priority Applic: US 20050013785 A1 20050120 US 2004824128 20040414
 US 2004824128 20040414

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Display 6/3/13 (Item 2 from file: 340)
 DIALOG(R)File 340:CLAIMS(R)/US Patent
 (c) 2007 IFI/CLAIMS(R). All rts. reserv.
 Provisional Applic: US 60-462862 20030414

- end of record -

?

Display 6/3/14 (Item 1 from file: 342)
 DIALOG(R)File 342:Derwent Patents Citation Indx
 (c)2007 The Thomson Corp. All rts. reserv.

06140481 WPI Acc No: 04-795182/78
 Cosmetic composition useful as lip product comprises anhydrous mixture of
 modified silicones containing aminosilicones, carboxy modified silicones
 and/or epoxy modified silicones, organosiloxane resin and volatile carrier
 -

Patent Assignee: (PROC) PROCTER & GAMBLE CO; (NOELL C J
 Author (Inventor): BEKELE H; DAVISON C; WAGSTAFF Q T
 Patent (basic)
 Patent No Kind Date Examiner Field of Search
 WO 200491559 A2 041028 (BASIC) None
 Derwent Week (Basic): 0478
 Priority Data: US 462866P (030414)
 Applications: AU 2004229575 (040414); CN 20048001016 (040414); EP

2004759588 (040414); US 824118 (040414); WO 2004US11975 (040414); JP 2006501279 (040414); MX 11016 (051013); KR 2005719674 (051014)
Designated States

-more-

? Display 6/3/14 (Item 1 from file: 342)
DIALOG(R)File 342:Derwent Patents Citation Indx
(c)2007 The Thomson Corp. All rts. reserv.
(National): AE; AG; AL; AM; AT; AU; AZ; BA; BB; BG; BR; BW; BY; BZ; CA; CH; CN; CO; CR; CU; CZ; DE; DK; DM; DZ; EC; EE; EG; ES; FI; GB; GD; GE; GH; GM; HR; HU; ID; IL; IN; IS; JP; KE; KG; KP; KR; KZ; LC; LK; LR; LS; LT; LU; LV; MA; MD; MG; MK; MN; MW; MX; MZ; NA; NI; NO; NZ; OM; PG; PH; PL; PT; RO; RU; SC; SD; SE; SG; SK; SL; SY; TJ; TM; TN; TR; TT; TZ; UA; UG; US; UZ; VN; YU; ZA; ZM; ZW
(Regional): AL; AT; BE; BG; BW; CH; CY; CZ; DE; DK; EA; EE; ES; FI; FR; GB; GH; GM; GR; HR; HU; IE; IT; KE; LI; LS; LT; LU; LV; MC; MK; MW; MZ; NL; OA; PL; PT; RO; SD; SE; SI; SK; SL; SZ; TR; TZ; UG; ZM; ZW
Derwent Class: A26; A96; D21
Int Pat Class: A61K-007/025; A61K-007/06; A61K-007/11; A61K-008/18; A61K-008/19; A61K-008/25; A61K-008/30; A61K-008/31; A61K-008/72; A61K-008/89; A61K-008/891; A61K-008/894; A61K-008/895; A61K-008/896; A61K-008/898; A61Q-001/02; A61Q-001/04
Number of Patents: 009
Number of Countries: 109
Number of Cited Patents: 007

-more-

? Display 6/3/14 (Item 1 from file: 342)
DIALOG(R)File 342:Derwent Patents Citation Indx
(c)2007 The Thomson Corp. All rts. reserv.
Number of Cited Literature References: 002
Number of Citing Patents: 000

- end of record -

? Display 6/3/15 (Item 1 from file: 345)
DIALOG(R)File 345:INPADOC/Family & Legal Stat

34418230 Family ID: 4418231
<No. of Patents: 11> <No. of Countries: 9>
<No. of Legal Status: 28>
Patent Basic (No,Kind,Date): AU 2004229575 A1 20041028
Anhydrous, transfer-resistant cosmetic lip compositions (English)
Patent Assignee: PROCTER & GAMBLE; CATHERINE NOELL
Author (Inventor): BEKELE HAIMANOT; WAGSTAFF QADIRA TAYYIBA; DAVISON CLAIR
Record Type: Legal Status; Abstract; Cited Refs

Patent Family:

Patent No	Kd	Date	Applic No	Kd	Date	Wk Added
AU 2004229575	A1	20041028	AU 2004229575	A	20040414	200550 (B)
AU 2004229575	B2	20070419	AU 2004229575	A	20040414	200723
CA 2521479	A1	20041028	CA 2521479	A	20040414	200552
CN 1774235	A	20060517	CN 200480010164	A	20040414	200632

-more-

? Display 6/3/15 (Item 1 from file: 345)
DIALOG(R)File 345:INPADOC/Family & Legal Stat

EP 1615616 A2 20060118 EP 2004759588 A 20040414 200552
 JP 2006523617 T 20061019 JP 2006501279 T 20040414 200647
 KR 2006006926 A 20060120 KR 20057019674 A 20051014 200644
 MX 2005PA011016 A 20060427 MX 2005PA11016 A 20051013 200632
 US 20050025793 A1 20050203 US 2004824118 A 20040414 200507
 WO 2004091559 A2 20041028 WO 2004US11975 A 20040414 200445
 WO 2004091559 A3 20041202 WO 2004US11975 A 20040414 200450

Priority Data (No,Kind,Date):

US 2003462866 P 20030414
 WO 2004US11975 A 20040414
 US 2004824118 A 20040414

- end of record -

?

? ds

Set Items Description

S1 80 (COMPOSITION? OR FORMULATION?) AND AMINOSILICONE? AND ORGANOSILOXANE (4W) RESIN?

S2 32 S1 AND ANHYDROUS

S3 58 S1 AND VOLATILE

S4 29 S2 AND VOLATILE

S5 29 S4 AND RESIN

S6 15 S5 AND COSMETIC

? s cosmetic and silicone? (s) organosiloxane? (4w) resin? and carrier

Processing

183901 COSMETIC

527519 SILICONE?

41207 ORGANOSILOXANE?

1941862 RESIN?

1905 SILICONE? (S) ORGANOSILOXANE? (4W) RESIN?

1841676 CARRIER

S7 257 COSMETIC AND SILICONE? (S) ORGANOSILOXANE? (4W) RESIN? AND CARRIER

? d s7/3/1-57

Display 7/3/1 (Item 1 from file: 654)

DIALOG(R)File 654:US PAT.FULL.

(c) Format only 2007 Dialog. All rts. reserv.

7321525

UTILITY

Gel wrap providing musculo-skeletal support

Inventor: Binder, David M., 1928 Hickory Ridge R, Richmond, VA, 23233, US

Leicht, Edward C., 443 Camino Laguna Vis, Goleta, CA, 93117, US

Binder, William J., 120 S. Spalding Dr., Suite 3, Beverly Hills, CA, 90212, US

Assignee: Unassigned

Examiner: Lewis, Kim M.

Legal Representative: Drew Wintringham Clifford Chance US LLP

	Publication Number	Kind	Date	Application Number	Filing Date
Main Patent	US 7303539	B2	20071204	US 2002334201	20021231
Related Publ	US 20030167028	A1	20030904		

-more-

?

Display 7/3/1 (Item 1 from file: 654)

DIALOG(R)File 654:US PAT.FULL.

(c) Format only 2007 Dialog. All rts. reserv.

CIP US 6963019 A US 2001931974 20010817

Provisional

US 60-226602 20000821

US Term Extension: 307 days

Fulltext Word Count: 4862

- end of record -

?
Display 7/3/2 (Item 2 from file: 654)
DIALOG(R)File 654:US PAT.FULL.
(c) Format only 2007 Dialog. All rts. reserv.

7303174

UTILITY

Arm suspension sleeve

Inventor: Binder, William J., Beverly Hills, CA, US
Leicht, Edward C., Goleta, CA, US
Assignee: Gelzone, Inc., (02), Richmond, VA, US
Examiner: Lewis, Kim M.
Legal Representative: Clifford Chance US LLP

	Publication Number	Kind	Date	Application Number	Filing Date
Main Patent	US 7297128	B2	20071120	US 2004829867	20040421
Related Publ	US 20040260224	A1	20041223		
Continuation	US 6963019	A		US 2001931974	20010817
CIP	PENDING			US 2002334201	20021231

-more-

?
Display 7/3/2 (Item 2 from file: 654)
DIALOG(R)File 654:US PAT.FULL.
(c) Format only 2007 Dialog. All rts. reserv.
Provisional US 60-226602 20000821

US Term Extension: 617 days

Fulltext Word Count: 8258

- end of record -

?
Display 7/3/3 (Item 3 from file: 654)
DIALOG(R)File 654:US PAT.FULL.
(c) Format only 2007 Dialog. All rts. reserv.

7282174

UTILITY

Oral Care Composition with Silicone Composite
Inventor: Maitra, Prithviraj, Randolph, NJ, US
Chopra, Suman K., Monroe, NJ, US
Trivedi, Harsh M., Somerset, NJ, US
Ibrahim, Sayed, Somerset, NJ, US
Xu, Tao, East Brunswick, NJ, US
Prencipe, Michael, Princeton Junction, NJ, US

Assignee: Unassigned

Correspondence Address: COLGATE-PALMOLIVE COMPANY, 909 RIVER ROAD,
PISCATAWAY, NJ, 08855, US

	Publication Number	Kind	Date	Application Number	Filing Date

-more-

?
Display 7/3/3 (Item 3 from file: 654)
DIALOG(R)File 654:US PAT.FULL.
(c) Format only 2007 Dialog. All rts. reserv.
Main Patent US 20070253916 A1 20071101 US 2007739393 20070424
Provisional US 60-796383 20060501

Fulltext Word Count: 7918

- end of record -

?
Display 7/3/4 (Item 4 from file: 654)
DIALOG(R)File 654:US PAT.FULL.
(c) Format only 2007 Dialog. All rts. reserv.

7279284

UTILITY

Hair coloring kits and methods of use thereof
Inventor: Errey, Pauline Jane, New Canan, CT, US
Haas, Christine Lee, New York, NY, US
Hille, Vera, Barnes, GB
Stephens, Tracy, Bracknell, GB
Assignee: The Procter & Gamble Company, (02)
Correspondence Address: THE PROCTER & GAMBLE COMPANY;INTELLECTUAL PROPERTY
DIVISION - WEST BLDG., WINTON HILL BUSINESS CENTER - BOX 412, 6250
CENTER HILL AVENUE, CINCINNATI, OH, 45224, US

	Publication Number	Kind	Date	Application Number	Filing Date
Main Patent	US 20070251025	A1	20071101	US 2006413823	20060428

-more-

?
Display 7/3/4 (Item 4 from file: 654)
DIALOG(R)File 654:US PAT.FULL.
(c) Format only 2007 Dialog. All rts. reserv.

Fulltext Word Count: 14038

- end of record -

?
Display 7/3/5 (Item 5 from file: 654)
DIALOG(R)File 654:US PAT.FULL.
(c) Format only 2007 Dialog. All rts. reserv.

7216605

UTILITY

Silicone Adhesive Formulation Containing An Antiperspirant
Inventor: Murphy, Kevin Patrick, Midland, MI, US
Schalau, Gerald Kenneth II, Freeland, MI, US
Assignee: DOW CORNING CORPORATION, (02)
Correspondence Address: DOW CORNING CORPORATION CO1232, 2200 W. SALZBURG
ROAD, P.O. BOX 994, MIDLAND, MI, 48686-0994, US

	Publication Number	Kind	Date	Application Number	Filing Date

Main Patent US 20070212314 A1 20070913 US 2005658133 20050727
PCT WO 2005US27126 20050727
Provisional US 60-607667 20040907

-more-

?
Display 7/3/5 (Item 5 from file: 654)
DIALOG(R)File 654:US PAT.FULL.
(c) Format only 2007 Dialog. All rts. reserv.

Fulltext Word Count: 8574

- end of record -

?
Display 7/3/6 (Item 6 from file: 654)
DIALOG(R)File 654:US PAT.FULL.
(c) Format only 2007 Dialog. All rts. reserv.

6973691 **IMAGE Available

UTILITY

Solid skin care composition comprising multiple layers

Inventor: Taniguchi, Toshiya, Kobe, JP

Sako, Takashi, Kobe, JP

Fujiwara, Yoko, Himeji, JP

Fujii, Kiyohiko, Ota-ku, JP

Watanabe, Nobuo, Ota-ku, JP

Assignee: Unassigned

Correspondence Address: THE PROCTER & GAMBLE COMPANY; INTELLECTUAL PROPERTY
DIVISION, WINTON HILL BUSINESS CENTER - BOX 161, 6110 CENTER HILL
AVENUE, CINCINNATI, OH, 45224, US

Publication Number	Kind	Date	Application Number	Filing Date
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-more-

?
Display 7/3/6 (Item 6 from file: 654)
DIALOG(R)File 654:US PAT.FULL.
(c) Format only 2007 Dialog. All rts. reserv.
Main Patent US 20070060666 A1 20070315 US 2006517696 20060908
Provisional US 60-715686 20050909

Fulltext Word Count: 13917

- end of record -

?
Display 7/3/7 (Item 7 from file: 654)
DIALOG(R)File 654:US PAT.FULL.
(c) Format only 2007 Dialog. All rts. reserv.

6973675

UTILITY

Solid skin care composition comprising multiple layers

Inventor: Taniguchi, Toshiya, Kobe, JP

Sako, Takashi, Kobe, JP

Fujiwara, Yoko, Himeji, JP

Fujii, Kiyohiko, Ota-ku, JP

Watanabe, Nobuo, Ota-ku, JP

Assignee: Unassigned

Correspondence Address: THE PROCTER & GAMBLE COMPANY; INTELLECTUAL PROPERTY

DIVISION, WINTON HILL BUSINESS CENTER - BOX 161, 6110 CENTER HILL AVENUE, CINCINNATI, OH, 45224, US

Publication Number	Kind	Date	Application Number	Filing Date
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Display 7/3/7 (Item 7 from file: 654)
DIALOG(R)File 654:US PAT.FULL.
(c) Format only 2007 Dialog. All rts. reserv.
Main Patent US 20070060650 A1 20070315 US 2006517749 20060908
Provisional US 60-715684 20050909

Fulltext Word Count: 12103

- end of record -

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Display 7/3/8 (Item 8 from file: 654)
DIALOG(R)File 654:US PAT.FULL.
(c) Format only 2007 Dialog. All rts. reserv.

6972288
UTILITY
Solid skin care composition comprising multiple layers
Inventor: Taniguchi, Toshiya, Kobe, JP
Sako, Takashi, Kobe, JP
Fujiwara, Yoko, Himeji, JP
Fujii, Kiyohiko, Ota-ku, JP
Watanabe, Nobuo, Ota-ku, JP

Assignee: Unassigned
Correspondence Address: THE PROCTER & GAMBLE COMPANY; INTELLECTUAL PROPERTY
DIVISION, WINTON HILL BUSINESS CENTER - BOX 161, 6110 CENTER HILL
AVENUE, CINCINNATI, OH, 45224, US

Publication Number	Kind	Date	Application Number	Filing Date
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Display 7/3/8 (Item 8 from file: 654)
DIALOG(R)File 654:US PAT.FULL.
(c) Format only 2007 Dialog. All rts. reserv.
Main Patent US 20070059263 A1 20070315 US 2006517981 20060908
Provisional US 60-715687 20050909

Fulltext Word Count: 15055

- end of record -

?
Display 7/3/9 (Item 9 from file: 654)
DIALOG(R)File 654:US PAT.FULL.
(c) Format only 2007 Dialog. All rts. reserv.

6972287
UTILITY
Solid skin care composition comprising multiple layers
Inventor: Taniguchi, Toshiya, Kobe, JP

Assignee: Unassigned

Correspondence Address: THE PROCTER & GAMBLE COMPANY; INTELLECTUAL PROPERTY
DIVISION, WINTON HILL BUSINESS CENTER - BOX 161, 6110 CENTER HILL
AVENUE, CINCINNATI, OH, 45224, US

	Publication Number	Kind	Date	Application Number	Filing Date
Main Patent	US 20070059262	A1	20070315	US 2006517697	20060908
Provisional				US 60-715685	20050909

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Display 7/3/9 (Item 9 from file: 654)
DIALOG(R)File 654:US PAT.FULL.
(c) Format only 2007 Dialog. All rts. reserv.
Fulltext Word Count: 14338

- end of record -

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Display 7/3/10 (Item 10 from file: 654)
DIALOG(R)File 654:US PAT.FULL.
(c) Format only 2007 Dialog. All rts. reserv.

6903957
UTILITY
Methods of merchandising hair color refresher products
Inventor: Errey, Pauline Jane, New Canaan, CT, US
Agrawal, Monica, Stamford, CT, US
Klapper, Mona Klein, Rye Brook, NY, US
Assignee: Unassigned

Correspondence Address: THE PROCTER & GAMBLE COMPANY; INTELLECTUAL PROPERTY
DIVISION, WINTON HILL BUSINESS CENTER - BOX 161, 6110 CENTER HILL
AVENUE, CINCINNATI, OH, 45224, US

	Publication Number	Kind	Date	Application Number	Filing Date
Main Patent	US 20070017039	A1	20070125	US 2005187554	20050722

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Display 7/3/10 (Item 10 from file: 654)
DIALOG(R)File 654:US PAT.FULL.
(c) Format only 2007 Dialog. All rts. reserv.

Fulltext Word Count: 10391

- end of record -

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Display 7/3/11 (Item 11 from file: 654)
DIALOG(R)File 654:US PAT.FULL.
(c) Format only 2007 Dialog. All rts. reserv.

6742539
UTILITY
Flexible support for gel wraps
Inventor: Binder, David M., Richmond, VA, US
Leicht, Edward C., Goleta, CA, US
Binder, William J., Beverly Hills, CA, US
Assignee: Gelzone, Inc., (02), Richmond, VA, US

Examiner: Zalukaeva, Tatyana

Assistant Examiner: Gibson, Keshia

Legal Representative: Wintringham, III, Drew M.; Clifford Chance US LLP

	Publication Number	Kind	Date	Application Number	Filing Date
Main Patent	US 7112183	B2	20060926	US 2004810535	20040326
Related Publ	US 20040208913	A1	20041021		

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Display 7/3/11 (Item 11 from file: 654)
DIALOG(R)File 654:US PAT.FULL.

(c) Format only 2007 Dialog. All rts. reserv.

Continuation	PENDING	US 2001931974	20010817
Provisional		US 60-226602	20000818

Disclaimer: This patent is subject to a terminal disclaimer.

Fulltext Word Count: 2683

- end of record -

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Display 7/3/12 (Item 12 from file: 654)
DIALOG(R)File 654:US PAT.FULL.

(c) Format only 2007 Dialog. All rts. reserv.

6713251

UTILITY

Flexible support for gel wraps

Inventor: Binder, David M., Richmond, VA, US

Leicht, Edward C., Goleta, CA, US

Binder, William J., Beverly Hills, CA, US

Assignee: GelZone, Inc., (02), Richmond, VA, US

Examiner: Zalukaeva, Tatyana

Assistant Examiner: Gibson, Keshia

Legal Representative: Wintringham, Drew; Clifford Chance US LLP

	Publication Number	Kind	Date	Application Number	Filing Date
Main Patent	US 7101349	B2	20060905	US 2004825766	20040416
Related Publ	US 20050027228	A1	20050203		

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Display 7/3/12 (Item 12 from file: 654)
DIALOG(R)File 654:US PAT.FULL.

(c) Format only 2007 Dialog. All rts. reserv.

Division	PENDING	US 2001931974	20010817
Provisional		US 60-226602	20000821

Disclaimer: This patent is subject to a terminal disclaimer.

Fulltext Word Count: 3149

- end of record -

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Display 7/3/13 (Item 13 from file: 654)
DIALOG(R)File 654:US PAT.FULL.

(c) Format only 2007 Dialog. All rts. reserv.

6647770

Derwent Accession: 2001-202815

UTILITY

C/ Electrostatically-sprayable topical compositions having insulating external phase and conductive internal phase
; APPLYING TO SKIN MIXTURE OF PIGMENT AND ABSORBER

Inventor: Rabe, Thomas Elliot, Baltimore, MD, US

Yen, Helen Shu Ying, Cockeysville, MD, US

Brennock, June Turkanis, Cincinnati, OH, US

Martello, Caroline Becque, Parkton, MD, US

Assignee: The Procter & Gamble Company, (02), Cincinnati, OH, US
Procter & Gamble Co The (Code: 68128)

Examiner: Webman, Edward J.

Legal Representative: Vitenberg, Vladimir; Kendall, Dara M.; Little, Darryl C.

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Display 7/3/13 (Item 13 from file: 654)

DIALOG(R)File 654:US PAT.FULL.

(c) Format only 2007 Dialog. All rts. reserv.

	Publication Number	Kind	Date	Application Number	Filing Date
Main Patent	US 7078046	B1	20060718	US 2000629734	20000731
CIP	PENDING			US 2000584464	20000531
Provisional				US 60-149566	19990818
Provisional				US 60-149566	19990818

US Term Extension: 245 days

Fulltext Word Count: 12619

- end of record -

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Display 7/3/14 (Item 14 from file: 654)

DIALOG(R)File 654:US PAT.FULL.

(c) Format only 2007 Dialog. All rts. reserv.

6643638 **IMAGE Available

Derwent Accession: 2004-593138

UTILITY

Exothermic composition and exothermic element

Inventor: Usui, Kaoru, Tochigi, JP

Kimura, Hisao, Tochigi, JP

Aida, Michio, Tochigi, JP

Dodo, Toshihiro, Tochigi, JP

Assignee: MYCOAL PRODUCTS CORPORATION, (03), Tochigi-shi, JP

Correspondence Address: ARMSTRONG, KRATZ, QUINTOS, HANSON & BROOKS, LLP,
1725 K STREET, NW, SUITE 1000, WASHINGTON, DC, 20006, US

	Publication Number	Kind	Date	Application Number	Filing Date
Main Patent	US 20060154006	A1	20060713	US 2003539748	20031219

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Display 7/3/14 (Item 14 from file: 654)

DIALOG(R)File 654:US PAT.FULL.

(c) Format only 2007 Dialog. All rts. reserv.

PCT
Priority

WO 2003JP16338 20031219

JP 2002382632 20021227

Fulltext Word Count: 19895

- end of record -

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Display 7/3/15 (Item 15 from file: 654)
DIALOG(R)File 654:US PAT.FULL.
(c) Format only 2007 Dialog. All rts. reserv.

6623755
Derwent Accession: 2006-510983

UTILITY

Instant tooth whitening with silicone resin and silicone adhesive
Inventor: Ibrahim, Sayed, Somerset, NJ, US
Patel, Suryakant, Bridgewater, NJ, US
Chopra, Suman K., Dayton, NJ, US
Prencipe, Michael, West Windsor, NJ, US

Assignee: Unassigned

Correspondence Address: COLGATE-PALMOLIVE COMPANY, 909 RIVER ROAD,
PISCATAWAY, NJ, 08855, US

	Publication Number	Kind	Date	Application Number	Filing Date
Main Patent	US 20060142411	A1	20060629	US 200425583	20041229

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Display 7/3/15 (Item 15 from file: 654)
DIALOG(R)File 654:US PAT.FULL.
(c) Format only 2007 Dialog. All rts. reserv.

Fulltext Word Count: 9902

- end of record -

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Display 7/3/16 (Item 16 from file: 654)
DIALOG(R)File 654:US PAT.FULL.
(c) Format only 2007 Dialog. All rts. reserv.

6602745 **IMAGE Available
Derwent Accession: 2002-382789

UTILITY

Gel wrap providing musculo-skeletal support
Inventor: Binder, David M., Richmond, VA, US
Leicht, Edward C., Goleta, CA, US
Binder, William J., Beverly Hills, CA, US

Assignee: Unassigned

Correspondence Address: CLIFFORD CHANCE US LLP, 31 WEST 52ND STREET, NEW
YORK, NY, 10019-6131, US

	Publication Number	Kind	Date	Application Number	Filing Date
Main Patent	US 20060129081	A1	20060615	US 2006347652	20060203
Continuation	PENDING			US 2002334201	20021231

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Display 7/3/16 (Item 16 from file: 654)
DIALOG(R)File 654:US PAT.FULL.
(c) Format only 2007 Dialog. All rts. reserv.
CIP US 6963019 US 2001931974 20010817
Provisional US 60-226602 20000821

Fulltext Word Count: 4868

- end of record -

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Display 7/3/17 (Item 17 from file: 654)
DIALOG(R)File 654:US PAT.FULL.
(c) Format only 2007 Dialog. All rts. reserv.

6601132
Derwent Accession: 2006-444175
UTILITY
Methods and related compositions for reduction of fat and skin tightening
Inventor: Kolodney, Michael S., Santa Monica, CA, US
Rotunda, Adam M., Los Angeles, CA, US
Assignee: Unassigned
Correspondence Address: PRESTON GATES & ELLIS LLP, 1900 MAIN STREET, SUITE 600, IRVINE, CA, 92614-7319, US

	Publication Number	Kind	Date	Application Number	Filing Date
Main Patent	US 20060127468	AI	20060615	US 2005286825	20051123
CIP	PENDING			US 2005134727	20050519
CIP	PENDING			US 200554171	20050208

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Display 7/3/17 (Item 17 from file: 654)
DIALOG(R)File 654:US PAT.FULL.
(c) Format only 2007 Dialog. All rts. reserv.
Provisional US 60-572879 20040519

Fulltext Word Count: 20824

- end of record -

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Display 7/3/18 (Item 18 from file: 654)
DIALOG(R)File 654:US PAT.FULL.
(c) Format only 2007 Dialog. All rts. reserv.

6577501
Derwent Accession: 2006-363294
UTILITY
Solid personal care composition
Inventor: Hatano, Satoru, Ashiya, JP
Lam, Virginia Ann, Baltimore, MD, US
Assignee: The Procter & Gamble Company, (03)
Correspondence Address: THE PROCTER & GAMBLE COMPANY; INTELLECTUAL PROPERTY DIVISION, WINTON HILL TECHNICAL CENTER - BOX 161, 6110 CENTER HILL AVENUE, CINCINNATI, OH, 45224, US

	Publication Number	Kind	Date	Application Number	Filing Date
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Main Patent US 20060112503 A1 20060601 US 2005289058 20051129
Provisional US 60-631385 20041129

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Display 7/3/18 (Item 18 from file: 654)
DIALOG(R)File 654:US PAT.FULL.
(c) Format only 2007 Dialog. All rts. reserv.

Fulltext Word Count: 6783

- end of record -

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Display 7/3/19 (Item 19 from file: 654)
DIALOG(R)File 654:US PAT.FULL.
(c) Format only 2007 Dialog. All rts. reserv.

6568145

Derwent Accession: 2004-294859

UTILITY

Formulations designed to be applied on keratinous material and to be rinsed
Inventor: Anthony, Olivier, Meriel, FR
Geffroy, Cedric, Poitiers, FR

Assignee: Unassigned

Correspondence Address: Jean Louis Seugnet;Intellectual Property Department
, Rhodia Inc CN7500, 259 Prospect Plains Road, Cranbury, NJ, 08512-7500
, US

	Publication Number	Kind	Date	Application Number	Filing Date
Main Patent	US 20060107469	A1	20060525	US 2003527071	20030826
PCT	WO 2003FR2579		20030826		

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Display 7/3/19 (Item 19 from file: 654)
DIALOG(R)File 654:US PAT.FULL.
(c) Format only 2007 Dialog. All rts. reserv.
Provisional US 60-409352 20020909

Fulltext Word Count: 18968

- end of record -

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Display 7/3/20 (Item 20 from file: 654)
DIALOG(R)File 654:US PAT.FULL.
(c) Format only 2007 Dialog. All rts. reserv.

6513376 **IMAGE Available

Derwent Accession: 2006-271740

UTILITY

Transdermal drug delivery device including an occlusive backing
Inventor: Kanios, David, Miami, FL, US

Mantelle, Juan A., Miami, FL, US

Nguyen, Viet, Miami, FL, US

Assignee: Noven Pharmaceuticals, Inc., (02)

Correspondence Address: DICKSTEIN SHAPIRO MORIN & OSHINSKY LLP, 2101 L
Street, NW, Washington, DC, 20037, US

	Publication Number	Kind	Date	Application Number	Filing Date
Main Patent	US 20060078604	A1	20060413	US 2005245180	20051007
Provisional				US 60-616861	20041008

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Display 7/3/20 (Item 20 from file: 654)
 DIALOG(R)File 654:US PAT.FULL.
 (c) Format only 2007 Dialog. All rts. reserv.

Fulltext Word Count: 19497

- end of record -

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Display 7/3/21 (Item 21 from file: 654)
 DIALOG(R)File 654:US PAT.FULL.
 (c) Format only 2007 Dialog. All rts. reserv.

6513375 **IMAGE Available
 Derwent Accession: 2006-283006

UTILITY
 Transdermal delivery of drugs based on crystal size
 Inventor: Nguyen, Viet, Miami, FL, US
 Assignee: Noven Pharmaceuticals, Inc., (02)
 Correspondence Address: DICKSTEIN SHAPIRO MORIN & OSHINSKY LLP, 2101 L Street, NW, Washington, DC, 20037, US

	Publication Number	Kind	Date	Application Number	Filing Date
Main Patent	US 20060078603	A1	20060413	US 2005245106	20051007
Provisional				US 60-617561	20041008

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Display 7/3/21 (Item 21 from file: 654)
 DIALOG(R)File 654:US PAT.FULL.
 (c) Format only 2007 Dialog. All rts. reserv.

Fulltext Word Count: 10231

- end of record -

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Display 7/3/22 (Item 22 from file: 654)
 DIALOG(R)File 654:US PAT.FULL.
 (c) Format only 2007 Dialog. All rts. reserv.

6513374
 Derwent Accession: 2006-283005
 UTILITY

Device for transdermal administration of drugs including acrylic polymers
 Inventor: Kanios, David, Miami, FL, US
 Assignee: Noven Pharmaceuticals, Inc., (02)
 Correspondence Address: DICKSTEIN SHAPIRO MORIN & OSHINSKY LLP, 2101 L Street, NW, Washington, DC, 20037, US

Publication Number	Kind	Date	Application Number	Filing Date
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Main Patent US 20060078602 A1 20060413 US 2005245097 20051007
Provisional US 60-616860 20041008

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? Display 7/3/22 (Item 22 from file: 654)
DIALOG(R)File 654:US PAT.FULL.
(c) Format only 2007 Dialog. All rts. reserv.
Fulltext Word Count: 9072

- end of record -

? Display 7/3/23 (Item 23 from file: 654)
DIALOG(R)File 654:US PAT.FULL.
(c) Format only 2007 Dialog. All rts. reserv.

6456818
Derwent Accession: 2006-202582

UTILITY

Long-wearing cosmetic compositions

Inventor: Yu, Warren Hwa-lin, Owings Mills, MD, US
Bekela, Haininot, Baltimore, MD, US
Frank Rainey, Donald, Owings Mills, MD, US
Sanford, Ronald Alan, York, PA, US

Assignee: Unassigned

Correspondence Address: THE PROCTER & GAMBLE COMPANY;INTELLECTUAL PROPERTY
DIVISION, WINTON HILL TECHNICAL CENTER - BOX 161, 6110 CENTER HILL
AVENUE, CINCINNATI, OH, 45224, US

Publication Number	Application Kind	Date	Number	Filing Date
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? Display 7/3/23 (Item 23 from file: 654)
DIALOG(R)File 654:US PAT.FULL.
(c) Format only 2007 Dialog. All rts. reserv.
Main Patent US 20060045893 A1 20060302 US 2004927994 20040827

Fulltext Word Count: 8660

- end of record -

? Display 7/3/24 (Item 24 from file: 654)
DIALOG(R)File 654:US PAT.FULL.
(c) Format only 2007 Dialog. All rts. reserv.

6456779
Derwent Accession: 2006-202568

UTILITY

Oral care composition with cross-linked polymer peroxide

Inventor: Zaidel, Lynette, Cranford, NJ, US
Pan, Guisheng, Spotswood, NJ, US
Chopra, Suman K., Dayton, NJ, US
Mandadi, Prakasrao, Hillsborough, NJ, US
Frencipe, Michael, West Windsor, NJ, US

Assignee: Unassigned

Correspondence Address: COLGATE-PALMOLIVE COMPANY, 909 RIVER ROAD,

PISCATAWAY, NJ, 08855, US

Publication Number	Kind	Date	Application Number	Filing Date
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Display 7/3/24 (Item 24 from file: 654)
DIALOG(R)File 654:US PAT.FULL.
(c) Format only 2007 Dialog. All rts. reserv.
Main Patent US 20060045854 A1 20060302 US 2004929087 20040827

Fulltext Word Count: 11434

- end of record -

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Display 7/3/25 (Item 25 from file: 654)
DIALOG(R)File 654:US PAT.FULL.
(c) Format only 2007 Dialog. All rts. reserv.

6447747
Derwent Accession: 2006-172447
UTILITY
Low pH structured surfactant compositions
Inventor: Frantz, Seren, Bensalem, PA, US
Warburton, Stewart Alexander, West Windsor, NJ, US
Assignee: Unassigned
Correspondence Address: Kevin E. McVeigh;RHODIA INC., 259 Prospect Plains
Road, Cranbury, NJ, 08512, US

Publication Number	Kind	Date	Application Number	Filing Date
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Main Patent US 20060040837 A1 20060223 US 2005205877 20050817
Provisional US 60-602156 20040817

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Display 7/3/25 (Item 25 from file: 654)
DIALOG(R)File 654:US PAT.FULL.
(c) Format only 2007 Dialog. All rts. reserv.

Fulltext Word Count: 6582

- end of record -

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Display 7/3/26 (Item 26 from file: 654)
DIALOG(R)File 654:US PAT.FULL.
(c) Format only 2007 Dialog. All rts. reserv.

6428488
Derwent Accession: 2006-144850
UTILITY
Polysaccharide graft copolymers and their use in personal care applications
Inventor: Gunn, Euen, Trenton, NJ, US
Liu, Leo Zhaoqing, Lawrenceville, NJ, US
Priou, Christian, Charbonnieres-Les-Bains, FR
Gabianelli, Alvino, Holland, PA, US
Warburton, Stewart Alexander, West Windsor, NJ, US
Assignee: Unassigned

Correspondence Address: KEVIN E. MC VEIGH;RHODIA INC., 259 PROSPECT PLAINS ROAD, CRANBURY, NJ, 08512, US

Publication Number	Kind	Date	Application Number	Filing Date
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Display 7/3/26 (Item 26 from file: 654)
DIALOG(R)File 654:US PAT.FULL.
(c) Format only 2007 Dialog. All rts. reserv.
Main Patent US 20060029561 A1 20060209 US 2005196359 20050803
Provisional US 60-598548 20040803

Fulltext Word Count: 7322

- end of record -

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Display 7/3/27 (Item 27 from file: 654)
DIALOG(R)File 654:US PAT.FULL.
(c) Format only 2007 Dialog. All rts. reserv.

6419609
Derwent Accession: 2006-135324

UTILITY

Oral care compositions with film forming polymers
Inventor: Maitra, Prithwiraj, Somerset, NJ, US
Zaidel, Lynette, Cranford, NJ, US
Chopra, Suman K., Dayton, NJ, US
Pan, Guisheng, Spotswood, NJ, US
Prencipe, Michael, West Windsor, NJ, US
Ibrahim, Sayed, Somerset, NJ, US

Assignee: Unassigned

Correspondence Address: HARNESS, DICKEY, & PIERCE, P.L.C., 7700 BONHOMME, STE 400, ST. LOUIS, MO, 63105, US

Publication Number	Kind	Date	Application Number	Filing Date
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Display 7/3/27 (Item 27 from file: 654)
DIALOG(R)File 654:US PAT.FULL.
(c) Format only 2007 Dialog. All rts. reserv.

Main Patent US 20060024246 A1 20060202 US 2004902720 20040729

Fulltext Word Count: 12695

- end of record -

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Display 7/3/28 (Item 28 from file: 654)
DIALOG(R)File 654:US PAT.FULL.
(c) Format only 2007 Dialog. All rts. reserv.

6410646
Derwent Accession: 2006-117210
UTILITY
Skin care composition

Inventor: Chen, Minghua, Kobe, JP
Sun, Peiwen, Chao Yang District, CN
Date, Akira, Ashiya, JP
Yuyama, Etsuko, Kobe, JP
Bissett, Donald Lynn, Hamilton, OH, US

Assignee: Unassigned

Correspondence Address: THE PROCTER & GAMBLE COMPANY;INTELLECTUAL PROPERTY
DIVISION, WINTON HILL TECHNICAL CENTER - BOX 161, 6110 CENTER HILL
AVENUE, CINCINNATI, OH, 45224, US

Publication Number	Kind	Date	Application Number	Filing Date
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Display 7/3/28 (Item 28 from file: 654)
DIALOG(R)File 654:US PAT.FULL.
(c) Format only 2007 Dialog. All rts. reserv.

Main Patent	US 20060018858	A1	20060126	US 2005187449	20050722
				US 60-590561	20040723

Fulltext Word Count: 9157

- end of record -

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Display 7/3/29 (Item 29 from file: 654)
DIALOG(R)File 654:US PAT.FULL.
(c) Format only 2007 Dialog. All rts. reserv.

6347947 **IMAGE Available
Derwent Accession: 2006-027315

UTILITY

Methods and related compositions for reduction of fat
Inventor: Kolodney, Michael S., Santa Monica, CA, US

Rotunda, Adam M., Los Angeles, CA, US

Assignee: Unassigned

Correspondence Address: PRESTON GATES & ELLIS LLP, 1900 MAIN STREET, SUITE
600, IRVINE, CA, 92614-7319, US

Publication Number	Kind	Date	Application Number	Filing Date
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Main Patent	US 20050267080	A1	20051201	US 2005134727	20050519
				US 60-572879	20040519

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Display 7/3/29 (Item 29 from file: 654)
DIALOG(R)File 654:US PAT.FULL.
(c) Format only 2007 Dialog. All rts. reserv.

Fulltext Word Count: 18945

- end of record -

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Display 7/3/30 (Item 30 from file: 654)
DIALOG(R)File 654:US PAT.FULL.
(c) Format only 2007 Dialog. All rts. reserv.

6346810 **IMAGE Available

Derwent Accession: 2006-009278

UTILITY

Mousse formulations

Inventor: Gefroy-Hyland, Nathalie, Franconville, FR

Kanji, Mohamed, Edison, NJ, US

Bui, Hy Si, Piscataway, NJ, US

Assignee: L'OREAL, (03), 14, rue Royale, Paris, 75008, FR

Correspondence Address: LERNER, DAVID, LITTBENBERG, KRMHOLZ & MENTLIK, 600

SOUTH AVENUE WEST, WESTFIELD, NJ, 07090, US

	Publication Number	Kind	Date	Application Number	Filing Date
Main Patent	US 20050265943	A1	20051201	US 2005138940	20050526
Provisional				US 60-574652	20040526

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Display 7/3/30 (Item 30 from file: 654)

DIALOG(R)File 654:US PAT.FULL.

(c) Format only 2007 Dialog. All rts. reserv.

Fulltext Word Count: 11942

- end of record -

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Display 7/3/31 (Item 31 from file: 654)

DIALOG(R)File 654:US PAT.FULL.

(c) Format only 2007 Dialog. All rts. reserv.

6318748 **IMAGE Available

Derwent Accession: 2002-382789

UTILITY

Flexible support for gel wraps

Inventor: Binder, David M., Richmond, VA, US

Leicht, Edward C., Goleta, CA, US

Binder, William J., Beverly Hills, CA, US

Assignee: GelZone, Inc., (02), Richmond, VA, US

Examiner: Schwartz, Larry I.

Assistant Examiner: Gibson, Keshia

Legal Representative: Kelley, Margaret B.; Clifford Chance, LLP US

	Publication Number	Kind	Date	Application Number	Filing Date
Main Patent	US 6963019	B2	20051108	US 2001931974	20010817

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Display 7/3/31 (Item 31 from file: 654)

DIALOG(R)File 654:US PAT.FULL.

(c) Format only 2007 Dialog. All rts. reserv.

Related Publ US 20020072697 A1 20020613

Provisional US 60-226602 20000821

US Term Extension: 282 days

Fulltext Word Count: 2537

- end of record -

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Display 7/3/32 (Item 32 from file: 654)
DIALOG(R)File 654:US PAT.FULL.
(c) Format only 2007 Dialog. All rts. reserv.

6311763
Derwent Accession: 2005-766289
UTILITY
Process and kit-of-parts for improved hair conditioning after coloring
bleaching or perming
Inventor: Bureiko, Andrei Sergeevich, Ascot, GB
Godfrey, Simon Paul, Uxbridge, GB
Raineau, Olivier Charles, Paris, FR
Assignee: Unassigned
Correspondence Address: THE PROCTER & GAMBLE COMPANY;INTELLECTUAL PROPERTY
DIVISION, WINTON HILL TECHNICAL CENTER - BOX 161, 6110 CENTER HILL
AVENUE, CINCINNATI, OH, 45224, US

Publication Number	Kind	Date	Application Number	Filing Date
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Display 7/3/32 (Item 32 from file: 654)
DIALOG(R)File 654:US PAT.FULL.
(c) Format only 2007 Dialog. All rts. reserv.
Main Patent US 20050241076 A1 20051103 US 2005116906 20050428
Priority EP 2004252547 20040430

Fulltext Word Count: 11777

- end of record -

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Display 7/3/33 (Item 33 from file: 654)
DIALOG(R)File 654:US PAT.FULL.
(c) Format only 2007 Dialog. All rts. reserv.

6235975
Derwent Accession: 2005-673578
UTILITY
Solid water-in-oil emulsion make-up composition
Inventor: Taniguchi, Toshiya, Kobe, JP
Assignee: Unassigned
Correspondence Address: THE PROCTER & GAMBLE COMPANY;INTELLECTUAL PROPERTY
DIVISION, WINTON HILL TECHNICAL CENTER - BOX 161, 6110 CENTER HILL
AVENUE, CINCINNATI, OH, 45224, US

Publication Number	Kind	Date	Application Number	Filing Date
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Main Patent US 20050191329 A1 20050901 US 200563103 20050222
Provisional US 60-548143 20040226

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Display 7/3/33 (Item 33 from file: 654)
DIALOG(R)File 654:US PAT.FULL.
(c) Format only 2007 Dialog. All rts. reserv.

Fulltext Word Count: 7155

- end of record -

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Display 7/3/34 (Item 34 from file: 654)
DIALOG(R)File 654:US PAT.FULL.
(c) Format only 2007 Dialog. All rts. reserv.

6235974
Derwent Accession: 2005-647011
UTILITY
Make-up composition
Inventor: Taniguchi, Toshiya, Kobe, JP
Assignee: Unassigned
Correspondence Address: THE PROCTER & GAMBLE COMPANY; INTELLECTUAL PROPERTY
DIVISION, WINTON HILL TECHNICAL CENTER - BOX 161, 6110 CENTER HILL
AVENUE, CINCINNATI, OH, 45224, US

	Publication Number	Kind	Date	Application Number	Filing Date
Main Patent	US 20050191328	A1	20050901	US 200563102	20050222
Provisional				US 60-548142	20040226
Provisional				US 60-610096	20040915

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Display 7/3/34 (Item 34 from file: 654)
DIALOG(R)File 654:US PAT.FULL.
(c) Format only 2007 Dialog. All rts. reserv.

Fulltext Word Count: 9908

- end of record -

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Display 7/3/35 (Item 35 from file: 654)
DIALOG(R)File 654:US PAT.FULL.
(c) Format only 2007 Dialog. All rts. reserv.

6205203
Derwent Accession: 2002-425812
UTILITY
Transparent concentrated hair conditioning composition
Inventor: Snyder, Michael Albert, Mason, OH, US
Komure, Natsumi, Ashiya, JP
Assignee: The Procter & Gamble Company, (02), Cincinnati, OH, US
Examiner: Boyer, Charles
Legal Representative: Sivik, Linda M.; Rosnell, Tara M.

	Publication Number	Kind	Date	Application Number	Filing Date
Main Patent	US 6927196	B2	20050809	US 2003387885	20030313
Related Publ	US 20030216267	A1	20031120	WO 2001US28475	20010913
Continuation	PENDING				

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Display 7/3/35 (Item 35 from file: 654)
DIALOG(R)File 654:US PAT.FULL.
(c) Format only 2007 Dialog. All rts. reserv.

US Term Extension: 26 days

Fulltext Word Count: 11337

- end of record -

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Display 7/3/36 (Item 36 from file: 654)
DIALOG(R)File 654:US PAT.FULL.
(c) Format only 2007 Dialog. All rts. reserv.

6095175
Derwent Accession: 2003-558821
UTILITY
Personal cleansing compositions comprising silicone resin-containing
adhesives
Inventor: Chappell, Michael Jahi, Ann Arbor, MI, US
Clapp, Mannie Lee, Mason, OH, US
Johnson, Eric Scott, Hamilton, OH, US
Taylor, Rebecca Ann, Fairfield, OH, US
McHugh, Colin Michael, Mason, OH, US
Smith III, Edward Dewey, Mason, OH, US
Assignee: The Procter & Gamble Company, (02)

Correspondence Address: THE PROCTER & GAMBLE COMPANY; INTELLECTUAL PROPERTY
DIVISION, WINTON HILL TECHNICAL CENTER - BOX 161, 6110 CENTER HILL
AVENUE, CINCINNATI, OH, 45224, US

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Display 7/3/36 (Item 36 from file: 654)
DIALOG(R)File 654:US PAT.FULL.
(c) Format only 2007 Dialog. All rts. reserv.

	Publication Number	Kind	Application Date	Number	Filing Date
Main Patent	US 20050100522	A1	20050512	US 200413754	20041216
Division	PENDING			US 2002255446	20020926
Provisional				US 60-325021	20010926

Fulltext Word Count: 7657

- end of record -

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Display 7/3/37 (Item 37 from file: 654)
DIALOG(R)File 654:US PAT.FULL.
(c) Format only 2007 Dialog. All rts. reserv.

6081608
Derwent Accession: 2003-513437
UTILITY
Topical compositions containing fluid-absorbent solids and adhesive fluids
Inventor: Clapp, Mannie Lee, Mason, OH, US
Taylor, Rebecca Ann, Fairfield, OH, US
McHugh, Colin Michael, Mason, OH, US
Sunkel, Jorge Max, Cincinnati, OH, US
Felts, Timothy James, Hamilton, OH, US
Smith, III, Edward Dewey, Mason, OH, US
Syfert, Scott William, Fort Mitchell, KY, US
Roddy, Michael Joseph, Cincinnati, OH, US
Corkery, Robert William, Cincinnati, OH, US
Assignee: The Procter & Gamble Company, (02), Cincinnati, OH, US
Examiner: Barts, Samuel
Assistant Examiner: Henry, Michael C.

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Display 7/3/37 (Item 37 from file: 654)
DIALOG(R)File 654:US PAT.FULL.
(c) Format only 2007 Dialog. All rts. reserv.
Legal Representative: Clay, Cynthia L.; Howell, John M.; Dressman, Marianne

	Publication Number	Kind	Date	Application Number	Filing Date
Main Patent	US 6887859	B2	20050503	US 2002255283	20020926
Related Publ	US 20030118533	A1	20030626		
Provisional				US 60-325023	20010926

US Term Extension: 122 days

Fulltext Word Count: 9391

- end of record -

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Display 7/3/38 (Item 38 from file: 654)
DIALOG(R)File 654:US PAT.FULL.
(c) Format only 2007 Dialog. All rts. reserv.

6044435
Derwent Accession: 2005-202364
UTILITY
Rapid temporary tooth whitening composition
Inventor: Ibrahim, Sayed, Somerset, NJ, US
Chopra, Suman K., Dayton, NJ, US
Principe, Michael, West Windsor, NJ, US
Assignee: Unassigned
Correspondence Address: HARNESS, DICKEY, & PIERCE, P.L.C., 7700 BONHOMME,
STE 400, ST. LOUIS, MO, 63105, US

	Publication Number	Kind	Date	Application Number	Filing Date
Main Patent	US 20050069501	A1	20050331	US 2004915124	20040810
CIP	PENDING			US 2003641963	20030815

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Display 7/3/38 (Item 38 from file: 654)
DIALOG(R)File 654:US PAT.FULL.
(c) Format only 2007 Dialog. All rts. reserv.

Fulltext Word Count: 6848

- end of record -

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Display 7/3/39 (Item 39 from file: 654)
DIALOG(R)File 654:US PAT.FULL.
(c) Format only 2007 Dialog. All rts. reserv.

6022250 **IMAGE Available
Derwent Accession: 2003-812371
UTILITY
REASSIGNED
Electrostatic spray device

Inventor: Sumiyoshi, Toru, Okayama, JP
Kadlubowski, Bryan Michael, Manchester, MD, US
Wilson, David Edward, Reistertown, MD, US
Blystone, Ryan Norris, Greensboro, NC, US
Assignee: The Procter & Gamble Company, (02), Cincinnati, OH, US
Examiner: Scherbel, David A.
Assistant Examiner: Gorman, Darren
Legal Representative: Vitenberg, Vladimir

Publication Number	Kind	Date	Application Number	Filing Date
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Display 7/3/39 (Item 39 from file: 654)
DIALOG(R)File 654:US PAT.FULL.
(c) Format only 2007 Dialog. All rts. reserv.

Main Patent	US 6866212	B2	20050315	US 2003374925	20030225
Related Publ	US 20040021017	Al	20040205		
Provisional				US 60-359425	20020225

US Term Extension: 51 days

Fulltext Word Count: 11638

- end of record -

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Display 7/3/40 (Item 40 from file: 654)
DIALOG(R)File 654:US PAT.FULL.
(c) Format only 2007 Dialog. All rts. reserv.

5993250
Derwent Accession: 2005-172187
UTILITY
Rapid temporary tooth whitening composition
Inventor: Ibrahim, Sayed, Somerset, NJ, US
Chopra, Suman K., Dayton, NJ, US
Prencipe, Michael, West Windsor, NJ, US
Assignee: Unassigned
Correspondence Address: Colgate-Palmolive Company, 909 River Road, P.O. Box 1343, Piscataway, NJ, 08855-1343, US

Publication Number	Kind	Date	Application Number	Filing Date
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Main Patent	US 20050036959	Al	20050217	US 2003641963	20030815
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Display 7/3/40 (Item 40 from file: 654)
DIALOG(R)File 654:US PAT.FULL.
(c) Format only 2007 Dialog. All rts. reserv.

Fulltext Word Count: 3105

- end of record -

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Display 7/3/41 (Item 41 from file: 654)
DIALOG(R)File 654:US PAT.FULL.
(c) Format only 2007 Dialog. All rts. reserv.

5977086 **IMAGE Available
Derwent Accession: 2002-382789

UTILITY

Flexible support for gel wraps

Inventor: Binder, David M., Richmond, VA, US
Kimbail, William H., Alamo, CA, US
Leicht, Edward C., Goleta, CA, US
Binder, William J., Beverly Hills, CA, US

Assignee: Gelcro, LLC, (02)

Correspondence Address: Russell DeClerck, Esq.;Clifford Chance Rogers & Wells LLP, 200 Park Avenue, New York, NY, 10166, US

	Publication Number	Kind	Date	Application Number	Filing Date
Main Patent	US 20050027228	A1	20050203	US 2004825766	20040416

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Display 7/3/41 (Item 41 from file: 654)
DIALOG(R)File 654:US PAT.FULL.
(c) Format only 2007 Dialog. All rts. reserv.
Division PENDING US 2001931974 20010817
Provisional US 60-226602 20000821

Fulltext Word Count: 3132

- end of record -

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Display 7/3/42 (Item 42 from file: 654)
DIALOG(R)File 654:US PAT.FULL.
(c) Format only 2007 Dialog. All rts. reserv.

5975652

Derwent Accession: 2007-351406

UTILITY

Anhydrous, transfer-resistant cosmetic lip compositions

Inventor: Bekale, Haimanot, Baltimore, MD, US
Davison, Claire, Baltimore, MD, US
Wagstaff, Qadira Tayyiba, Baltimore, MD, US
Noell, Catherine Joyce, Cincinnati, OH, US

Assignee: The Procter & Gamble Company, (02)

Correspondence Address: THE PROCTER & GAMBLE COMPANY;INTELLECTUAL PROPERTY
DIVISION, WINTON HILL TECHNICAL CENTER - BOX 161, 6110 CENTER HILL
AVENUE, CINCINNATI, OH, 45224, US

	Publication Number	Kind	Date	Application Number	Filing Date
Main Patent	US 20050025793	A1	20050203	US 2004824118	20040414

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Display 7/3/42 (Item 42 from file: 654)
DIALOG(R)File 654:US PAT.FULL.
(c) Format only 2007 Dialog. All rts. reserv.
Main Patent US 20050025793 A1 20050203 US 2004824118 20040414
Provisional US 60-462866 20030414

Fulltext Word Count: 4793

- end of record -

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Display 7/3/43 (Item 43 from file: 654)
DIALOG(R)File 654:US PAT.FULL.
(c) Format only 2007 Dialog. All rts. reserv.

5957461
Derwent Accession: 2004-804432
UTILITY
Anhydrous, silicone modified fluorinated polymers for transfer-resistant
cosmetic lip compositions
Inventor: Smith, Steven Daryl, Fairfield, OH, US
Underiner, Todd Laurence, Cincinnati, OH, US
Assignee: The Procter & Gamble Company, (02)
Correspondence Address: THE PROCTER & GAMBLE COMPANY; INTELLECTUAL PROPERTY
DIVISION, WINTON HILL TECHNICAL CENTER - BOX 161, 6110 CENTER HILL
AVENUE, CINCINNATI, OH, 45224, US

	Publication Number	Kind	Date	Application Number	Filing Date
Main Patent	US 20050013785	A1	20050120	US 2004824128	20040414

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Display 7/3/43 (Item 43 from file: 654)
DIALOG(R)File 654:US PAT.FULL.
(c) Format only 2007 Dialog. All rts. reserv.
Provisional US 60-462862 20030414

Fulltext Word Count: 5464

- end of record -

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Display 7/3/44 (Item 44 from file: 654)
DIALOG(R)File 654:US PAT.FULL.
(c) Format only 2007 Dialog. All rts. reserv.

0005940556
Derwent Accession: 2005-112025
Polyol-in-silicone emulsions
Inventor: Wu, Jianxin, INV
Assignee: The Procter & Gamble Company(03)
Correspondence Address: THE PROCTER & GAMBLE COMPANY INTELLECTUAL PROPERTY
DIVISION, WINTON HILL TECHNICAL CENTER - BOX 161 6110 CENTER HILL
AVENUE, CINCINNATI, OH, 45224, US

	Publication Number	Kind	Date	Application Number	Filing Date
Main Patent	US 20050002976	A1	20050106	US 2004866942	20040614
Provisional				US 60-479967	20030619

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Display 7/3/44 (Item 44 from file: 654)
DIALOG(R)File 654:US PAT.FULL.
(c) Format only 2007 Dialog. All rts. reserv.
Fulltext Word Count: 9388

- end of record -

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Display 7/3/45 (Item 45 from file: 654)
DIALOG(R)File 654:US PAT.FULL.
(c) Format only 2007 Dialog. All rts. reserv.

5936222
Derwent Accession: 2004-614744
Utility
REASSIGNED
Method of making siloxane-based polyamide elastomers
Inventor: Lin, Zuchen, Midland, MI
Nguyen, Kimmai Thi, Midland, MI
Petroff, Lenin James, Bay City, MI
Assignee: Dow Corning Corporation(02), Midland, MI
Examiner: Moore, Margaret G. (Art Unit: 172)
Combined Principal Attorneys: Zonbeck, Alan

	Publication Number	Kind	Application Number	Filing Date
Main Patent	US 6838541	A	20050104	US 2003365851

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Display 7/3/45 (Item 45 from file: 654)
DIALOG(R)File 654:US PAT.FULL.
(c) Format only 2007 Dialog. All rts. reserv.

Fulltext Word Count: 3875

- end of record -

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Display 7/3/46 (Item 46 from file: 654)
DIALOG(R)File 654:US PAT.FULL.
(c) Format only 2007 Dialog. All rts. reserv.

0005923440
Derwent Accession: 2005-064706
Arm suspension sleeve
Inventor: Binder, William, INV
Carlson, Steve, INV
Leicht, Edward, INV
Correspondence Address: Margaret B. Kelley Clifford Chance US LLP, 31 West
52nd Street, New York, NY, 10019-6131, US

	Publication Number	Kind	Date	Application Number	Filing Date
Main Patent	US 20040260224	A1	20041223	US 2004829867	20040421
CIP	PENDING			US 2002334201	20021231
CIP	PENDING			US 2001931974	20010817
Provisional				US 60-226602	20000821

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Display 7/3/46 (Item 46 from file: 654)
DIALOG(R)File 654:US PAT.FULL.
(c) Format only 2007 Dialog. All rts. reserv.

Fulltext Word Count: 9957

- end of record -

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Display 7/3/47 (Item 47 from file: 654)
DIALOG(R)File 654:US PAT.FULL.
(c) Format only 2007 Dialog. All rts. reserv.

0005882080
Derwent Accession: 2007-427871
Cosmetic compositions comprising a polymer and a colorant
Inventor: Morrissey, Christopher, INV
Piatt, David, INV
Motley, Curtis, INV
Assignee: The Procter & Gamble Company(02)
Correspondence Address: THE PROCTER & GAMBLE COMPANY INTELLECTUAL PROPERTY
DIVISION, WINTON HILL TECHNICAL CENTER - BOX 161 6110 CENTER HILL
AVENUE, CINCINNATI, OH, 45224, US

	Publication Number	Kind	Date	Application Number	Filing Date
Main Patent	US 20040231070	A1	20041125	US 2004840833	20040507
Provisional				US 60-471594	20030519

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Display 7/3/47 (Item 47 from file: 654)
DIALOG(R)File 654:US PAT.FULL.
(c) Format only 2007 Dialog. All rts. reserv.

Fulltext Word Count: 10519

- end of record -

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Display 7/3/48 (Item 48 from file: 654)
DIALOG(R)File 654:US PAT.FULL.
(c) Format only 2007 Dialog. All rts. reserv.

0005876238
Derwent Accession: 2007-351314
Cosmetic system for application as a multi-step cosmetic
product
Inventor: Rabe, Thomas, INV
Turner, Crystal, INV
Moreland, Randy, INV
Assignee: The Procter & Gamble Company(02)
Correspondence Address: THE PROCTER & GAMBLE COMPANY INTELLECTUAL PROPERTY
DIVISION, WINTON HILL TECHNICAL CENTER - BOX 161 6110 CENTER HILL
AVENUE, CINCINNATI, OH, 45224, US

	Publication Number	Kind	Date	Application Number	Filing Date
Main Patent	US 20040228819	A1	20041118	US 2004840834	20040507

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Display 7/3/48 (Item 48 from file: 654)
DIALOG(R)File 654:US PAT.FULL.
(c) Format only 2007 Dialog. All rts. reserv.

Fulltext Word Count: 10845

- end of record -

? Display 7/3/49 (Item 49 from file: 654)
DIALOG(R)File 654:US PAT.FULL.
(c) Format only 2007 Dialog. All rts. reserv.

0005842570

Derwent Accession: 2002-382789

Flexible support for gel wraps

Inventor: Binder, David, INV
Kimball, William, INV
Leicht, Edward, INV
Binder, William, INV

Assignee: Gelcro, LLC(02)

Correspondence Address: Clifford Chance US LLP, 200 Park Avenue, New York,
NY, 10166-0153, US

	Publication Number	Kind	Date	Application Number	Filing Date
Main Patent	US 20040208913	A1	20041021	US 2004810535	20040326
Continuation	PENDING			US 2001931974	20010817

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? Display 7/3/49 (Item 49 from file: 654)
DIALOG(R)File 654:US PAT.FULL.
(c) Format only 2007 Dialog. All rts. reserv.
Provisional US 60-226602 20000821

Fulltext Word Count: 3432

- end of record -

? Display 7/3/50 (Item 50 from file: 654)
DIALOG(R)File 654:US PAT.FULL.
(c) Format only 2007 Dialog. All rts. reserv.

0005763781

Derwent Accession: 2004-697305

Cosmetic compositions containing composite siloxane polymers

Inventor: Patil, Anjali, INV
Callello, Joseph, INV
Sandewicz, Robert, INV
Manelski, Jean, INV
McIntosh, Kaya, INV

Correspondence Address: Julie Blackburn Revlon Consumer Products
Corporation, 237 Park Avenue, New York, NY, 10017, US

	Publication Number	Kind	Date	Application Number	Filing Date
Main Patent	US 20040161395	A1	20040819	US 2003367301	20030214

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Display 7/3/50 (Item 50 from file: 654)
DIALOG(R)File 654:US PAT.FULL.
(c) Format only 2007 Dialog. All rts. reserv.

Fulltext Word Count: 12521

- end of record -

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Display 7/3/51 (Item 51 from file: 654)
DIALOG(R)File 654:US PAT.FULL.
(c) Format only 2007 Dialog. All rts. reserv.

0005755447

Derwent Accession: 2004-614744

Method of making siloxane-based polyamide elastomers

Inventor: Lin, Zuchen, INV

Nguyen, Kimmai, INV

Petroff, Lenin, INV

Correspondence Address: Dow Corning Corporation Intellectual Property Dept
- CO1232, P.O. Box 994, Midland, MI, 48686-0994, US

	Publication Number	Kind	Date	Application Number	Filing Date
Main Patent	US 20040156807	A1	20040812	US 2003365851	20030212

Fulltext Word Count: 4788

- end of record -

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Display 7/3/52 (Item 52 from file: 654)
DIALOG(R)File 654:US PAT.FULL.
(c) Format only 2007 Dialog. All rts. reserv.

0005705205

Derwent Accession: 2002-383073

Transdermal administration of MENT

Inventor: Moo-Young, Alfred, INV

Tsong, Yun-Yen, INV

Assignee: The Population Council, Inc.(02), New York, NY

Correspondence Address: LERNER, DAVID, LITTBENBERG, KRUMHOLZ & MENTLIK, 600
SOUTH AVENUE WEST, WESTFIELD, NJ, 07090, US

	Publication Number	Kind	Date	Application Number	Filing Date
Main Patent	US 20040126418	A1	20040701	US 2003736428	20031215
Continuation	PENDING			US 98154287	19980916
Provisional				US 60-59301	19970917

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Display 7/3/52 (Item 52 from file: 654)
DIALOG(R)File 654:US PAT.FULL.
(c) Format only 2007 Dialog. All rts. reserv.

Fulltext Word Count: 13518

- end of record -

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Display 7/3/53 (Item 53 from file: 654)

DIALOG(R)File 654:US PAT.FULL.
(c) Format only 2007 Dialog. All rts. reserv.

0005636643

Derwent Accession: 2004-142763

Multi-step cosmetic benefit foundation kit and associated methods

Inventor: Rabe, Thomas, INV

Wildgust, Paul, INV

Assignee: THE PROCTER & GAMBLE COMPANY(02)

Correspondence Address: THE PROCTER & GAMBLE COMPANY INTELLECTUAL PROPERTY
DIVISION, WINTON HILL TECHNICAL CENTER - BOX 161 6110 CENTER HILL
AVENUE, CINCINNATI, OH, 45224, US

	Publication Number	Kind	Date	Application Number	Filing Date
Main Patent	US 20040086474	A1	20040506	US 2003439555	20030516
Provisional				US 60-389412	20020617

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Display 7/3/53 (Item 53 from file: 654)
DIALOG(R)File 654:US PAT.FULL.
(c) Format only 2007 Dialog. All rts. reserv.

Fulltext Word Count: 11664

- end of record -

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Display 7/3/54 (Item 54 from file: 654)
DIALOG(R)File 654:US PAT.FULL.
(c) Format only 2007 Dialog. All rts. reserv.

0005636642

Derwent Accession: 2004-142764

Multi-step sebum and perspiration absorption foundation kit and associated
methods

Inventor: Rabe, Thomas, INV

Wildgust, Paul, INV

Assignee: THE PROCTER & GAMBLE COMPANY(02)

Correspondence Address: THE PROCTER & GAMBLE COMPANY INTELLECTUAL PROPERTY
DIVISION, WINTON HILL TECHNICAL CENTER - BOX 161 6110 CENTER HILL
AVENUE, CINCINNATI, OH, 45224, US

	Publication Number	Kind	Date	Application Number	Filing Date
Main Patent	US 20040086473	A1	20040506	US 2003439554	20030516
Provisional				US 60-389415	20020617

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Display 7/3/54 (Item 54 from file: 654)
DIALOG(R)File 654:US PAT.FULL.
(c) Format only 2007 Dialog. All rts. reserv.

Fulltext Word Count: 11148

- end of record -

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Display 7/3/55 (Item 55 from file: 654)

DIALOG(R)File 654:US PAT.FULL.
(c) Format only 2007 Dialog. All rts. reserv.

0005542770

Derwent Accession: 2004-246607

Method of whitening teeth

Inventor: Date, Robert, INV

Price, Samantha, INV

White, Donald, INV

Assignee: The Procter & Gamble Company(03), Cincinnati, OH, US

Correspondence Address: THE PROCTER & GAMBLE COMPANY INTELLECTUAL PROPERTY
DIVISION, WINTON HILL TECHNICAL CENTER - BOX 161 6110 CENTER HILL
AVENUE, CINCINNATI, OH, 45224, US

	Publication Number	Kind	Date	Application Number	Filing Date
Main Patent	US 20040033205	A1	20040219	US 2003641251	20030814
Provisional				US 60-403725	20020815

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Display 7/3/55 (Item 55 from file: 654)

DIALOG(R)File 654:US PAT.FULL.

(c) Format only 2007 Dialog. All rts. reserv.

Fulltext Word Count: 8070

- end of record -

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Display 7/3/56 (Item 56 from file: 654)

DIALOG(R)File 654:US PAT.FULL.

(c) Format only 2007 Dialog. All rts. reserv.

5538857

Derwent Accession: 2001-102983

Utility

C/ Systems comprising organosiloxane resins for delivering oral care substances and for prolonging such delivery ; SYSTEM INCLUDING DELIVERY COMPOSITION OF ORGANOSILOXANE RESIN, VOLATILE CARRIER CAPABLE OF SOLUBILIZING RESIN, RHEOLOGY MODIFIER AND ORAL CARE SUBSTANCE, AND PROTECTIVE COMPOSITION OF ORGANOSILOXANE RESIN AND SOLUBILIZING VOLATILE CARRIER

Inventor: Yue, Jiang, West Chester, OH

Mitra, Sekhar, Guangzhou, CN

Assignee: The Procter & Gamble Company(02), Cincinnati, OH

Procter & Gamble Co The (Code: 68128)

Examiner: Rose, Shep K. (Art Unit: 164)

Combined Principal Attorneys: Hiland, Emelyn L.

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Display 7/3/56 (Item 56 from file: 654)

DIALOG(R)File 654:US PAT.FULL.

(c) Format only 2007 Dialog. All rts. reserv.

	Publication Number	Kind	Date	Application Number	Filing Date
Main Patent	US 6692727	A	20040217	US 200219031	20020320
PCT	WO 200101942		20010111	WO 2000US18189	20000630

371:

102e:

Priority

WO 99US15130	19990702
WO 99US15131	19990702
WO 2000US15890	20000609
WO 2000US15891	20000609

Fulltext Word Count: 8402

- end of record -

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Display 7/3/57 (Item 57 from file: 654)
DIALOG(R)File 654:US PAT.FULL.
(c) Format only 2007 Dialog. All rts. reserv.

0005523282 **IMAGE Available
Derwent Accession: 2003-812371
Electrostatic spray device
Inventor: Sumiyoshi, Toru, INV
Kadlubowski, Bryan, INV
Wilson, David, INV
Blystone, Ryan, INV

Assignee: The Procter & Gamble Company(03)
Correspondence Address: THE PROCTER & GAMBLE COMPANY INTELLECTUAL PROPERTY
DIVISION, WINTON HILL TECHNICAL CENTER - BOX 161 6110 CENTER HILL
AVENUE, CINCINNATI, OH, 45224, US

	Publication Number	Kind	Date	Application Number	Filing Date
Main Patent	US 20040021017	A1	20040205	US 2003374925	20030225

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Display 7/3/57 (Item 57 from file: 654)
DIALOG(R)File 654:US PAT.FULL.
(c) Format only 2007 Dialog. All rts. reserv.
Provisional US 60-359425 20020225

Fulltext Word Count: 14043

- end of record -

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Set	Items	Description
S1	80	(COMPOSITION? OR FORMULATION?) AND AMINOSILICONE? AND ORGANOSILOXANE (4W) RESIN?
S2	32	S1 AND ANHYDROUS
S3	58	S1 AND VOLATILE
S4	29	S2 AND VOLATILE
S5	29	S4 AND RESIN
S6	15	S5 AND COSMETIC
S7	257	COSMETIC AND SILICONE? (S) ORGANOSILOXANE? (4W) RESIN? AND CARRIER

? d s7/7/1,13,31,35,36,37,45,50,53,56
Display 7/7/1 (Item 1 from file: 654)
DIALOG(R)File 654:US PAT.FULL.
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7321525

UTILITY

Gel wrap providing musculo-skeletal support

Inventor: Binder, David M., 1928 Hickory Ridge R, Richmond, VA, 23233, US
Leicht, Edward C., 443 Camino Laguna Vis, Goleta, CA, 93117, US
Binder, William J., 120 S. Spalding Dr., Suite 3, Beverly Hills,
CA, 90212, US

Assignee: Unassigned

Examiner: Lewis, Kim M.

Legal Representative: Drew Wintringham Clifford Chance US LLP

	Publication Number	Kind	Date	Application Number	Filing Date
Main Patent	US 7303539	B2	20071204	US 2002334201	20021231
Related Publ	US 20030167028	A1	20030904		

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Display 7/7/1 (Item 1 from file: 654)

DIALOG(R)File 654:US PAT.FULL.

(c) Format only 2007 Dialog. All rts. reserv.

CIP US 6963019 A US 2001931974 20010817
Provisional US 60-226602 20000821

US Term Extension: 307 days

US Classification on document (Main): 602075000

(X-ref): 602048000; 602077000

Examiner Field of Search (US): 602041; 602042; 602043; 602044; 602055;
602048; 602047; 604304; 604308; 128888; 128889; 128893; 128894; 424443;
424449

International Classification (v8 + Attributes)

IPC + Level Value Position Status Version Action Source Office:
A61F-0013/00 A I F B 20060101 20071204 H US

Cited US Patents by Examiner:

Patent Number	Date	Main US Kind	Class	Inventor
		YYYYMM		

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Display 7/7/1 (Item 1 from file: 654)

DIALOG(R)File 654:US PAT.FULL.

(c) Format only 2007 Dialog. All rts. reserv.

US 6520926 B2 200302 Hall

Cited US Patents by Other:

Patent Number	Date	Main US Kind	Class	Inventor
US 4377160	198303	A		Romaine
US 5540922	199607	A		Fabo
US 5603145	199702	A		Arakawa et al.
US 6143946	200011	A		Doctor

Cited non-Patent References by Other:

Int'l Search Report dated Oct. 29, 2003 for PCT/US03/01287.

-more-

? Display 7/7/1 (Item 1 from file: 654)
DIALOG(R)File 654:US PAT.FULL.
(c) Format only 2007 Dialog. All rts. reserv.
Number of Claims: 27
Exemplary or Independent Claim Number(s): 6 10
Number of Drawing Sheets: 6
Number of Figures: 13
Number of US cited patent references: 5
Number of non-patent cited references: 1

Abstract:

[00000] A multi-layer wrap, and method of use, for providing more comfortable gel treatment to skin and pressure therapy for underlying skin, the wrap allowing for migration of moisture away from the skin while providing compressive musculo-skeletal support to the treatment site.

Summary of the Invention:

[0001] This application is a continuation-in-part of Ser. No. 09/931,974 filed Aug. 17, 2001, now allowed U.S. Pat. No. 6,963,019,

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? Display 7/7/1 (Item 1 from file: 654)
DIALOG(R)File 654:US PAT.FULL.
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which claims the benefit of Provisional Application 60/226,602 filed Aug. 21, 2000, now abandoned.

Description of the Drawings:

[0013] is a perspective view illustrating the use of one embodiment of this invention on the knee of a user.
[0014] is an embodiment illustrating gel layer
[0015] illustrates carrier
[0016] illustrates closure strip
[0017] illustrates a method of manufacture using gel bath
[0018] illustrates river of carrier
[0019] is a perspective view illustrating the use of particular embodiments of this invention adjacent to the knee joint of a user.
[0020] is a perspective view illustrating the use of an embodiment of the present invention about the thigh of a user, and showing loop surface
[0021] is an illustration of a perforated embodiment of the present invention.

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? Display 7/7/1 (Item 1 from file: 654)
DIALOG(R)File 654:US PAT.FULL.
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[0022] is an embodiment illustrating gel layer
[0023] is an embodiment illustrating gel layer
[0024] is an embodiment illustrating a gel layer
[0025] is an embodiment illustrating gel areas

Non-exemplary or Dependent Claim(s):

1. A multi-layer wrap comprising:
a silicone gel layer having a skin-contacting surface and an opposite

surface, wherein the skin-contacting surface contains surface imperfections which allow moisture to migrate away from the skin surface;
an elastic and supportive carrier layer having an outer loop surface and an opposite surface, wherein the carrier layer is the stretchable loop portion of a hook and loop fastener and wherein a moisture wicking material is incorporated into the composition of the carrier layer; and

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Display 7/7/1 (Item 1 from file: 654)
DIALOG(R)File 654:US PAT.FULL.

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 - wherein the opposite surface of the carrier layer is bonded to the opposite surface of the gel layer to form a two-ply composite.
- 2. The wrap according to claim 1, wherein the silicone gel layer is perforated.
- 3. The wrap according to claim 1, wherein the wicking material is selected from the group consisting of cotton, nylon, and polypropylene.
- 4. The wrap according to claim 1, wherein the wicking material is selected from the group consisting of cotton, nylon, polypropylene.
- 5. The wrap according to claim 1, further comprising a closure strip for removably securing the wrap around a part of a body, wherein the closure strip is the hook portion of a hook and loop fastener.
- 6. A method of providing skin treatment and musculo-skeletal support comprising:
 - wrapping a bandage around a portion of the body to be treated, said bandage having a gel layer having surface imperfections provided on a skin contacting surface and a carrier layer bonded to an

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DIALOG(R)File 654:US PAT.FULL.

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 - opposing surface of said gel layer, said carrier being both firm and elastic;
 - stretching said bandage around said portion of the body;
 - securing said bandage in a closed position; and,
 - migrating moisture through the surface imperfections and away from the portion of the body being treated.
- 7. The method of claim 6; wherein, said surface imperfections are grooves.
- 8. The method of claim 6; wherein, said surface imperfections are penetrations.
- 9. A method of providing skin treatment and musculo-skeletal support comprising:
 - wrapping a bandage around a portion of the body to be treated, said bandage having a gel layer having a gel layer for contacting the skin of the body portion to be treated, a moisture wicking material, and a carrier bonded to said gel and said wicking material, said carrier being both rigid and elastic;

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Display 7/7/1 (Item 1 from file: 654)
DIALOG(R)File 654:US PAT.FULL.

- (c) Format only 2007 Dialog. All rts. reserv.
 - stretching said bandage around said portion of the body;
 - securing said bandage in a closed position; and,

wicking moisture away from the portion of the body being treated.

- 10. A multi-layer wrap comprising:
 - a silicone gel layer having a skin-contacting surface and an opposite surface, wherein the skin-contacting surface contains surface imperfections which allow moisture to migrate away from the skin surface;
 - an elastic and supportive carrier layer having an outer loop surface and an opposite surface, wherein the carrier layer is the stretchable loop portion of a hook and loop fastener; and wherein the opposite surface of the carrier layer is bonded to the opposite surface of the gel layer to form a two-ply composite.
- 11. The wrap of claim 10, wherein the surface imperfections are grooves.
- 12. The wrap of claim 10, wherein the surface imperfections are penetrations through the gel layer.
- 13. The wrap according to claim 10, wherein the carrier provides

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Display 7/7/1 (Item 1 from file: 654)
DIALOG(R)File 654:US PAT.FULL.

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 - compressive, musculo-skeletal support in the area of application to a wearer of the wrap.
- 14. The wrap according to claim 13, wherein the carrier has an elastic modulus of about 50%.
- 15. The wrap according to claim 10, wherein the silicone gel contains medical additives.
- 16. The wrap according to claim 10, further comprising a closure strip for removably securing the wrap around a part of a body, wherein the closure strip is the hook portion of a hook and loop fastener.
- 17. A multi-layer wrap comprising:
 - an inner layer of a silicone gel having a skin-contacting surface and an opposite surface;
 - an outer layer of an elastic and supportive carrier having an outer loop surface and an opposite surface, wherein the carrier is the stretchable loop portion of a hook and loop fastener;
 - a layer of a moisture wicking material sandwiched between the opposite surface of the gel layer and the opposite surface of the

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DIALOG(R)File 654:US PAT.FULL.

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 - carrier layer; and wherein the layers are bonded together to form a three-ply composite.
- 18. The wrap according to claim 17, wherein the wicking material is selected from the group consisting of cotton, nylon, and polypropylene.
- 19. The wrap according to claim 17, wherein the carrier provides compressive, musculo-skeletal support in the area of application to a wearer of the wrap.
- 20. The wrap according to claim 19, wherein the carrier has an elastic modulus of about 50%.
- 21. The wrap according to claim 17, wherein the silicone gel contains medical additives.
- 22. A multi-layer wrap comprising:
 - an inner layer of silicone gel areas surrounded by a wicking material, which layer has a skin-contacting surface and an opposite surface; and
 - an outer layer of an elastic and supportive carrier having an

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DIALOG(R)File 654:US PAT.FULL.

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outer loop surface and an opposite surface, wherein the carrier is the stretchable loop portion of a hook and loop fastener; and wherein the opposite surface of the inner layer is bonded to the opposite surface of the carrier layer to form a two-ply composite.

23. The wrap according to claim 22, wherein the inner layer consists of a flattened, honey-combed cellular web wherein the cells contain the silicone gel.

24. The wrap according to claim 22, wherein the carrier provides compressive, musculo-skeletal support in the area of application to a wearer of the wrap.

25. The wrap according to claim 24, wherein the carrier has an elastic modulus of about 50%.

26. The wrap according to claim 22, wherein the silicone gel contains medical additives.

27. The wrap according to claim 24, further comprising a closure strip for removably securing the wrap around a part of a body, wherein the

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closure strip is the hook portion of a hook and loop fastener.

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DIALOG(R)File 654:US PAT.FULL.

(c) Format only 2007 Dialog. All rts. reserv.

6647770
Derwent Accession: 2001-202815

UTILITY

C/ Electrostatically-sprayable topical compositions having insulating external phase and conductive internal phase

; APPLYING TO SKIN MIXTURE OF PIGMENT AND ABSORBER

Inventor: Rabe, Thomas Elliot, Baltimore, MD, US
Yen, Helen Shu Ying, Cockeysville, MD, US
Brennock, June Turkanski, Cincinnati, OH, US
Martello, Caroline Becque, Parkton, MD, US

Assignee: The Procter & Gamble Company, (02), Cincinnati, OH, US
Procter & Gamble Co The (Code: 68128)

Examiner: Webman, Edward J.

Legal Representative: Vitenberg, Vladimir; Kendall, Dara M.; Little, Darryl C.

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? Display 7/7/13 (Item 13 from file: 654)
DIALOG(R)File 654:US PAT.FULL.

(c) Format only 2007 Dialog. All rts. reserv.

	Publication Number	Kind	Date	Application Number	Filing Date
Main Patent	US 7078046	Bl	20060718	US 2000629734	20000731
CIP	PENDING			US 2000584464	20000531

Provisional US 60-149566 19990818
Provisional US 60-149566 19990818

US Term Extension: 245 days
Current US Classification (Main): 424401000
(X-ref): 427475000; 514937000; 516020000; 516023000
US Classification on document (Main): 424401000
(X-ref): 514937000; 516020000; 516023000; 427475000
Examiner Field of Search (US): 42407803; 424063; 424065; 424069; 424401;
514844; 514848; 514937; 516020; 516023; 427475

International Classification (v8 + Attributes)

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DIALOG(R)File 654:US PAT.FULL.
(c) Format only 2007 Dialog. All rts. reserv.
IPC + Level Value Position Status Version Action Source Office:
A61K-0009/107 A I F B 20060101 20060718 H US
A61K-0042/34 A I L B 20060101 20060718 H US
B05D-0001/04 A I L B 20060101 20060718 H US

Cited US Patents by Examiner:

Patent Number	Date	Main US	Class	Inventor
US 5505937	A 199604			Castrogiovanni et al.

Cited US Patents by Other:

Patent Number	Date	Main US	Class	Inventor
US 3012969	A 196112			van der Minne et al.
US 4079894	A 197803			Harjar et al.

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(c) Format only 2007 Dialog. All rts. reserv.
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US 4776515 A 198810 Michalchik
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US 5222663 A 199306 Noakes et al.
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US 5422630 A 199506 Quinn et al.
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DIALOG(R)File 654:US PAT.FULL.

(c) Format only 2007 Dialog. All rts. reserv.

US 5800816 A 199809 Brieva et al.
US 5945111 A 199908 Esser

Cited non-US Patents by Other:

Patent Number	Kind	Date	Main US Class	Inventor
BE 882449		198007		
BE 882450		198007		
EP 96731		198312		
EP 523960		199301		
EP 523961		199301		
EP 523962		199301		
EP 523963		199301		
EP 523964		199301		
EP 544158		199306		
FR 2127433		197210		

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DIALOG(R)File 654:US PAT.FULL.

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GB 2128900		198405
GB 2273673		199406
GB 2273872		199407
GB 2291804	A	199602
GB 2319177	A	199805
JP 56097214		198108
JP 05192223	A	199308
JP 05192224	A	199308
JP 05194145	A	199308
JP 760166		199503
JP 07173031	A	199507
JP 10146216		199806
SU 867927		198109
WO 9411119		199405
WO 9427560		199412
WO 9529758		199511
WO 9603964	A1	199602

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DIALOG(R)File 654:US PAT.FULL.

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WO 9610459		199604
WO 9611062		199604
WO 9704737	A1	199702
WO 9717057	A1	199705
WO 9733527		199709
WO 9826752	A1	199806

Cited non-Patent References by Other:

Cook, T.H., et al., "Topographics of Dry Skn, Non-dry Skin, and Cosmetically Treated Dry Skin as Quantified by Skin Profilometry", *J. Soc. Cosmet. Chem.*, vol. 36, pp. 143-152 (Mar./Apr. 1985).
Dorogi, P.L., et al., "Assessment of Skin Conditions Using Profilometry", *Cosmetics & Toiletries*, vol. 104, pp. 39-44 (Mar. 1989).

Fulltext Word Count: 12619
Number of Claims: 21

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? Display 7/7/13 (Item 13 from file: 654)
DIALOG(R)File 654:US PAT.FULL.
(c) Format only 2007 Dialog. All rts. reserv.
Exemplary or Independent Claim Number(s): 1
Number of US cited patent references: 22
Number of non-US cited patent references: 33
Number of non-patent cited references: 2
Calculated Expiration Date: 20200531

References to Related Applications:

CROSS REFERENCE TO RELATED APPLICATION

[0001] This application claims priority under Title 35, United States Code 119(e) from U.S. Provisional Application No. 60/149,566, filed on Aug. 18, 1999 and is a continuation-in-part application of U.S. application Ser. No. 09/584,464, filed May 31, 2000.

Abstract:

[00000] Disclosed are electrostatically-sprayable topical compositions, more particularly topical emulsion compositions, and methods of treating the skin by electrostatic application of such compositions. In one aspect

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the composition comprises an insulating external phase comprising one or more insulating materials and a conductive internal phase comprising one or more conductive materials. The compositions preferably also contain one or more particulate materials to be deposited on the skin, e.g., pigments, inert absorbents and the like.

Summary of the Invention:

FIELD OF THE INVENTION

[0002] The present invention relates to electrostatically-sprayable topical compositions, more particularly topical emulsion compositions, and methods of treating the skin by electrostatic application of such compositions. Examples of electrostatically-sprayable compositions include color cosmetics and other skin care compositions.

BACKGROUND OF THE INVENTION

[0003] A variety of topically-applied skin treatment products are known. Typically, such products are applied by massaging or rubbing into

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the skin with the fingers or sponge-type applicator. Other methods of application are also known, including aerosol spraying, non-aerosol pump spraying, and electrostatic spraying. For example, electrostatic spraying of skin treatment agents is disclosed in U.S. Pat. No. 5,494,674, issued to Barnett et al. on Feb. 27, 1996.

[0004] Electrostatic spraying of topical materials has been proposed as

a means for more efficient consumption and product activity, control over application, ease and cleanliness/hygiene of application, and even coverage.

[0005] In particular, the art has described electrostatically-sprayable formulations which comprise a single, semi-conductive phase which is accomplished by modifying the conductivity of typically insulating fluids by blending with conductive fluids like ethanol. Such systems are essentially continuous in regard to their electrical resistivity in that the conductive and insulating fluids form a single phase.

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DIALOG(R)File 654:US PAT.FULL.

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[0006] While a variety of topical compositions have been provided, there is an ongoing need to improve cosmetic compositions to impart good coverage yet a natural appearance. There is also an ongoing need to improve delivery of skin care compositions in a non-irritating and efficient manner. For example, it is desirable to administer topical skin care actives uniformly to the skin, so as to maximize efficacy. Furthermore, there is an ongoing need to maximize formulation capability in order to improve esthetic and/or functional properties of topical compositions.

[0007] The present invention relates to novel methods of treating the skin by electrostatically spraying a topical composition on the skin, wherein the composition comprises an emulsion having an insulating, external phase and a conductive, internal phase. That such compositions can be electrostatically sprayed is surprising since the art has heretofore described essentially electrically-continuous systems.

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DIALOG(R)File 654:US PAT.FULL.

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[0008] This surprising development allows for wider formulation of electrostatically sprayable systems. That is, the formulation of essentially electrically continuous systems is limited by the need to maintain the electrical continuity of the system. On the other hand, in the present invention it is possible to utilize different levels of polar and non-polar-soluble or dispersible materials to thereby improve the benefits of the composition. In addition, incorporation of such ingredients wherein the non-polar material, e.g., nonpolar silicones or hydrocarbons, is in the external phase provides improved tactile sensation upon application and tends to reduce the irritation potential of volatile materials which may be incorporated into the internal phase. It is believed that the external, insulating phase insulates such potentially irritating materials from the skin while the product dries on the skin.

[0009] It has also been found that when powder materials (e.g., pigments) which are dispersible in the external phase, and not

-more-

? Display 7/7/13 (Item 13 from file: 654)
DIALOG(R)File 654:US PAT.FULL.

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substantially in the internal phase, are incorporated into the emulsion,

a "clustering" phenomena of powder results which makes the apparent droplet size (i.e., the droplet size perceived by the eye once the product has dried), smaller than the actual droplet size which is sprayed. Such smaller apparent droplet sizes tend to provide better integration of the product with the bare skin leading to a more natural look. This ability to integrate with the bare skin also enables the use of broader range of shade palettes while maintaining a natural appearance. In contrast, when pigments are incorporated into essentially single phase, semi-conductive compositions, the pigments are generally evenly distributed throughout the sprayed droplets. When such compositions are sprayed, the apparent droplet size approximates the droplet size actually sprayed.

SUMMARY OF THE INVENTION

[0010] The present invention relates to electrostatically-sprayable topical compositions, more particularly topical emulsion compositions,

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Display 7/7/13 (Item 13 from file: 654)
DIALOG(R)File 654:US PAT.FULL.

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and methods of treating the skin by electrostatic application of such compositions.

[0011] In one aspect the present invention provides a topical emulsion composition which is electrostatically sprayable, the composition comprising an insulating external phase comprising one or more insulating materials and a conductive internal phase comprising one or more conductive materials. The compositions comprise a component for providing some esthetic or functional benefit to the skin, which may be the insulating, conductive or other material. Preferred compositions comprise one or more particulate materials such as pigments, oil absorbers and the like.

[0012] The electrostatically sprayable emulsion compositions preferably comprise:

[0000]

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DIALOG(R)File 654:US PAT.FULL.

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[0013] a) from about 5% to about 75% of an insulating external phase comprising one or more insulating materials; and

[0014] b) from about 15% to about 80% of a conductive internal phase comprising one or more conductive materials.

The compositions preferably comprise from about 5 to about 75% of insulating material and from about 15% to about 80% of conductive material. Preferred compositions comprise from about 0.1% to about 35% of one or more powders.

[0015] Another aspect of the invention provides a method of treating the skin by electrostatically spraying such compositions. The present invention also relates to instructions for applying the composition by electrostatic spray techniques and a method of training one how to self-apply the compositions by electrostatic spray techniques.

[0016] It has been found that the present invention provides one or

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more skin care benefits, including one or more of improved color integration with bare skin (providing a more natural appearance and enabling broader useable shade palettes for a given skin color), improved skin feel, and reduced potential for local irritation.

DETAILED DESCRIPTION OF THE INVENTION

[0017] The essential elements of the present invention are herein described below. Also included are non-limiting descriptions of various optional and preferred elements useful in the compositions of the present invention.

[0018] The present invention can comprise, consist of, or consist essentially of any of the required or optional components and/or limitations described herein.

[0019] In the description of the invention various embodiments and/or individual features are disclosed. As will be apparent for the skilled

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? Display 7/7/13 (Item 13 from file: 654)
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practitioner all combinations of such embodiments and features are possible and can result in preferred executions of the invention.

[0020] All percentages and ratios are calculated by weight unless otherwise indicated. All percentages are calculated based on the total composition unless otherwise indicated.

[0021] All component or composition levels are in reference to the active level of that component or composition, and are exclusive of impurities, for example, residual solvents or by-products, which may be present in commercially available sources.

[0022] Referred to herein are trade names for materials. The inventors herein do not intend to be limited by materials under a certain trade name. Equivalent materials (e.g., those obtained from a different source under a different name or catalog (reference) number) to those referenced by trade name may be substituted and utilized in the compositions herein.

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[0023] The compositions described herein and their components are suitable for topical application, that is they are suitable for use in contact with human skin without undue toxicity, incompatibility, instability, allergic response, and the like within the scope of sound medical judgment.

[0024] Active and other ingredients useful herein may be categorized or described herein by their cosmetic, prophylactic and/or therapeutic benefit or their postulated mode of action. It is to be understood that the active and other ingredients useful herein can in some instances

provide more than one cosmetic, prophylactic and/or therapeutic benefit or operate via more than one mode of action. Therefore, classifications herein are made for the sake of convenience and are not intended to limit an ingredient to the particularly stated application or applications listed.

[0025] All documents referred to herein, including all patents, patent

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applications, and printed publications, are hereby incorporated by reference in their entirety.

[0026] Compositions of the present invention are electrostatically sprayable, topical emulsion compositions comprising (i) an insulating, continuous external phase comprising one or more liquid insulating materials, and (ii) a conductive, discontinuous internal phase comprising one or more conductive materials which may be in liquid or particulate form. The conductive internal phase exists as droplets or particles dispersed in the insulating external phase. The compositions comprise a component for providing some esthetic or functional benefit to the skin, which may be the insulating, conductive or other material.

[0027] The compositions hereof are electrostatically sprayable and are suitably directly applied to the skin by electrostatic spray techniques. In general, this method involves raising the composition to be sprayed to a sufficiently high electric potential in a spray nozzle to cause the

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composition to atomize as a spray of electrically charged droplets. The electrically charged droplets seek the closest earthed object to discharge their electric charge, which can be arranged to be the desired spray target.

[0028] In order to be electrostatically sprayable, a composition must have a resistivity which enables atomization as a spray of the charged droplets. In preferred compositions, the components of the composition are selected or adjusted such that the composition has a resistivity of from about 0.01 to about 5000 Mega-ohm-cm, more preferably from about 0.01 to about 2000 Mega-ohm-cm, most preferably from about 0.1 to about 500 Mega-ohm-cm. Resistivity is measured using standard, conventional apparatus and methods, generally at 25 degree C. Resistivity can be adjusted as necessary by varying the relative levels of insulating materials and conductive materials. In general, resistivity decreases with increasing percentage of conductive materials and decreasing percentage of insulating materials.

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[0029] The compositions must also have a viscosity which permits electrostatically spraying. Materials of a wide range of viscosities may be suitable for use in the present invention, however the viscosity is

preferably sufficiently high to minimize wicking of the composition droplets as they are applied to the skin. The tendency to wick depends on the surface tension of the composition and tends to increase with decreasing surface tension of the liquid components. In compositions based on liquid components having a relatively low surface tension (i.e., which have a tendency to wet the substrate), it is generally desirable to utilize a viscosity increasing agent to minimize wicking such as the structuring agents or thickeners described herein. Preferably the viscosity is in the range of from about 0.1 to about 50,000 mPas, more preferably from about 0.5 to about 20,000 mPas, most preferably from about 5 to about 10,000 mPas (at 25 degree C., using 60 mm parallel plate with 0.5 mm gap at rate of 10 sec^{[sup]-1]).}

[0030] Insulating External Phase

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[0031] The insulating external phase comprises one or more insulating materials such that the insulating phase as a whole would not be suitable for electrostatic spraying (that is, it would not be able to cause sufficient alignment of the dipole molecules in the field to result in the subsequent, necessary net force). This phase preferably has a resistivity of about 2000 Mega-ohm-cm or more, more preferably about 5000 Mega-ohm-cm or more. This phase is fluid and comprises at least one insulating liquid material, preferably having a viscosity of about 10,000 mPas or less.

[0032] Suitable insulating materials are selected from non-polar substances, e.g. oils and other hydrophobic materials. The insulating materials may be volatile (i.e., having a measurable vapor pressure at 1 atm) or non-volatile, or mixtures of volatiles and non-volatiles, although volatile materials are preferred. Preferred liquid insulating materials have a viscosity of about 10,000 mPas or less. In addition to the at least one liquid insulating material, the composition may comprise

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non-liquid insulating materials. Preferred insulating materials are selected from the group consisting of volatile silicones, volatile hydrocarbons, and mixtures thereof.

[0033] Suitable volatile silicones include cyclic polyalkylsiloxanes represented by the chemical formula [SiR₂O]_n wherein R is an alkyl group (preferably R is methyl or ethyl, more preferably methyl) and n is an integer from about 3 to about 8, more preferably n is an integer from about 3 to about 7, and most preferably n is an integer from about 4 to about 6. When R is methyl, these materials are typically referred to as cyclomethicones. Commercially available cyclomethicones include Dow Corning(R) 244 fluid having a viscosity of 2.5 centistokes, and a boiling point of 172 degree C., which primarily contains the cyclomethicone tetramer (i.e. n=4), Dow Corning(R) 344 fluid having a viscosity of 2.5 centistokes and a boiling point of 178 degree C., which primarily contains the cyclomethicone pentamer (i.e. n=5), Dow Corning(R) 245 fluid having a viscosity of 4.2 centistokes and a boiling point of 205 degree

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C., which primarily contains a mixture of the cyclomethicone tetramer and pentamer (i.e. n=4 and 5), and Dow Corning(R) 345 fluid having a viscosity of 4.5 centistokes and a boiling point of 217 degree, which primarily contains a mixture of the cyclomethicone tetramer, pentamer, and hexamer (i.e. n=4, 5, and 6). Dow Corning(R) 244 fluid and Dow Corning(R) 344 fluid are preferred cyclomethicones.

[0034] Other suitable volatile silicones are linear polydimethyl siloxanes having from about 3 to about 9 silicon atoms and the general formula $(CH_{[sub]3})_{[sub]3} Si-O-[Si (CH_{[sub]3})_{[sub]3}]_{[sub]2-0-J-[sub]n-Si (CH_{[sub]3})_{[sub]3}]$ where n=0-7. These silicones are available from various sources including Dow Corning Corporation and General Electric.

[0035] Suitable volatile hydrocarbons include those having boiling points in the range of 60-260 degree C., more preferably hydrocarbons having from about C₁[sub]8 to about C₁[sub]20 chain lengths, most preferably C₁[sub]8 to C₁[sub]20 isoparaffins. Preferred isoparaffins are

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isododecane, isohexadecane, isooctocane, 2,2,4-trimethylpentane, 2,3-dimethylhexane and mixtures thereof, isododecane, isohexadecane, isooctocane, and mixtures thereof being more preferred. Most preferred is isododecane, for example available as Permethyl 99A from Permethyl Corporation. Additionally, nonvolatile insulating materials can include nonvolatile oils, silicone, or hydrocarbon based materials. These materials can be naturally or synthetically derived, such as mineral oil and isooctocane. Nonvolatile hydrocarbons may have a chain length ranging from C20 to C200. When used in the phase, nonvolatile insulating solvents typically range from 0.01% to 80% in the formulation.

[0036] Examples of non-volatile insulating materials suitable for use herein include non-volatile oils such as described in U.S. Pat. Nos. 5,800,816 and 5,505,937.

[0037] Conductive Internal Phase

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[0038] The conductive internal phase comprises one or more electrically conductive materials such that the composition as a whole can, when in the presence of a non-uniform electric field, generate dielectrophoretic forces great enough to pull the composition toward the region of highest field intensity (hence creating an electrostatic spray). The conductive internal phase preferably has a resistivity of less than 5000 Mega-ohm-cm, more preferably less than about 2000 Mega-ohm-cm, most preferably less than about 500 Mega-ohm-cm. This phase preferably also has a relaxation time which is sufficiently long to enable a spray wherein all of the droplets have a size of less than 300 microns by standard light microscopy techniques. The conductive internal phase preferably has a relaxation time of from about 1E-7 to 1 seconds, more preferably from about 1E-6 to 1E-2 seconds, most preferably from about

1E-5 to 1E-3 seconds. The conductive internal phase exists as droplets or particles dispersed in the insulating external phase.

[0039] The electrically conductive materials comprise one or more polar

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substances. The conductive materials may be liquid or non-liquid (e.g., solid particles), and volatile or non-volatile, although volatile liquid materials are preferred. Suitable solid particles include metal powders, particles coated with metal or other conductive material, charged species (e.g., salts such as NaCl, or salts used conventionally in buffers in personal care products), and hydrophilic coated polymeric particles. Suitable liquids include polar solvents, polar aprotic solvents, glycols, polyols and mixtures thereof. Preferred conductive materials are selected from the group consisting of water, alcohols, glycols, polyols, ketones, solid particles, and mixtures thereof, more preferably alcohols, glycols, polyols (typically comprising about 16 or less carbon atoms) and mixtures thereof. More preferred conductive materials are propylene glycol, butylene glycol, dipropylene glycol, phenyl ethyl alcohol, ethanol, isopropyl alcohol, glycerin, 1,3-butanediol, 1,2-propane diol, isoprene glycol, acetone, water, or a mixture thereof. Particularly preferred conductive materials are propylene glycol, butylene glycol, ethanol, glycerin, water, or a mixture thereof. The conductive material of the

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internal phase is more preferably selected from propylene glycol, ethanol, and mixtures thereof, and is most preferably propylene glycol.

[0040] The compositions hereof are more preferably non-aqueous or contain only a small amount of water, e.g., less than about 10% by weight, preferably less than about 5% by weight, even more preferably less than about 1% by weight water. This is because, due to its short relaxation time and low resistivity, compositions containing large amounts of water generally create sprays which are difficult to control in terms of droplet size and spacing when electrostatic means are used.

[0041] The relative levels of the external phase and internal phase may vary, provided that sufficient conductive internal phase is present such that the composition realizes the electrical potential during spraying. The compositions preferably comprise (i) from about 5% to about 75%, more preferably from about 15% to about 70%, most preferably from about 20% to about 60%, of the insulating external phase and (ii) from about 15% to

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about 80%, more preferably from about 20% to about 75%, most preferably from about 30% to about 70% of the conductive internal phase. In general, sprayability improves with the level of conductive internal phase such that it will normally be advantageous to maximize the level of conductive phase. Preferred compositions comprise a weight ratio of insulating external phase to conductive internal phase (disregarding any

non-conductive particulate materials) of from about 0.2:1 to about 8:1, more preferably about 1:1.

[0042] Optional Components

[0043] The compositions hereof comprise a component for providing some esthetic or functional benefit to the skin, e.g., sensory benefits relating to appearance, smell, or feel, therapeutic benefits, or prophylactic benefits. As will be recognized by the artisan having ordinary skill in the art, the above-described materials may themselves provide such benefits. In addition, the present compositions may comprise

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a variety of other ingredients such as are conventionally used in topical products.

[0044] The CTFA Cosmetic Ingredient Handbook, Second Edition (1992) describes a wide variety of nonlimiting cosmetic and pharmaceutical ingredients commonly used in the skin care industry, which are suitable for use in the topical compositions of the present invention. Such other materials may be dissolved or dispersed in the external and/or internal phase, depending on the relative solubilities of the components of the composition.

[0045] Compositions of the present invention are preferably generally liquid in form. Any adjunct materials which are present may be liquid, solid or semi-solid at room temperature, though they should be selected so not to deprive the composition of being electrostatically sprayable. For enhancing electrostatic spraying, preferred compositions have a solids content of about 35 weight % or less. In this regard, solids

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refers to particulate materials which are not soluble or miscible in the composition, and includes particulate pigments and oil absorbers.

[0046] Examples of suitable topical ingredient classes include: anti-acne agents, anti-inflammatory agents, anti-cellulite agents, anti-microbial agents, anti-fungal actives, antioxidants, radical scavengers, chelating agents, desquamation actives, skin bleaching and lightening agents, shine providing agents, shine control materials, skin-conditioning agents (e.g., humectants, including miscellaneous and occlusive), skin-feel agents, moisturizers, skin repair ingredients including agents for preventing, retarding, and/or reversing skin lines, wrinkles, or atrophy, skin soothing and/or healing agents, self-tanning actives, sunscreens, sunblocks, vitamins and derivatives thereof, abrasives, oil absorbers, astringents, skin sensates, film formers or materials, e.g., polymers, for aiding the film-forming properties and/or substantivity of the composition, including materials which impart extended wear and/or transfer resistance to the composition, colorants,

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dyes, opacifying agents, pigments, light scattering particles, essential oils, fragrance, anti-caking agents, antifoaming agents, binders, buffering agents, bulking agents, denaturants, pH adjusters, propellants, reducing agents, sequestrants, thickeners, structuring agents, emulsifiers, solubilizing agents, cosmetic biocides, and preservatives.

[0047] Preferred compositions of the invention comprise one or more ingredients selected from the group consisting of materials which impart transfer or wear resistant properties, powders, emulsifiers, structuring or thickening agents and mixtures thereof. Nonlimiting examples of these components include the following:

[0048] Materials for enhancing wear or transfer resistance. One or more materials for imparting film forming or substantive properties may be used in the present compositions, e.g., to provide long wear and/or transfer resistant properties. Such materials are typically used in an

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amount of from about 0.5% to about 20%.

[0049] Such materials include film forming polymeric materials. While the level of film forming polymeric material may vary, typically the film forming polymeric material is present in levels of from about 0.5% to about 20% by weight (e.g., from about 1 to about 15%), preferably from about 0.5% to about 10% by weight, more preferably from about 1% to about 8% by weight.

[0050] The film forming polymeric material may be soluble or dispersible in the internal or external phase, however in a preferred embodiment it is soluble or dispersible in the external phase. Preferred polymers form a non-tacky film which is removable with water used with cleansers such as soap.

[0051] Examples of suitable film forming polymeric materials include:

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[0052] a) sulfopolyester resins, such as AQ sulfopolyester resins, such as AQ29D, AQ35S, AQ38D, AQ38S, AQ48S, and AQ55S (available from Eastman Chemicals);

[0053] b) polyvinylacetate/polyvinyl alcohol polymers, such as Vinex resins available from Air Products, including Vinex 2034, Vinex 2144, and Vinex 2019;

[0054] c) acrylic resins, including water dispersible acrylic resins available from National Starch under the trade name "Dermacryl", including Dermacryl LT;

[0055] d) polyvinylpyrrolidones (PVP), including Luviskol K17, K30 and K90 (available from BASF), water soluble copolymers of PVP, including PVP/VA S-630 and W-735 and PVP/dimethylaminoethylmethacrylate Copolymers such as Copolymer 845 and Copolymer 937 available from ISP, as well as

other PVP polymers disclosed by E. S. Barabas in the Encyclopedia of

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Polymer Science and Engineering, 2 Ed. Vol. 17 pp. 198-257;

[0056] e) high molecular weight silicones such as dimethicone and organic-substituted dimethicones, especially those with viscosities of greater than about 50,000 mPas;

[0057] f) high molecular weight hydrocarbon polymers with viscosities of greater than about 50,000 mPas;

[0058] g) organosiloxanes, including organosiloxane resins, fluid diorganopolysiloxane polymers and silicone ester waxes.

[0059] Examples of these polymers and cosmetic compositions containing them are found in PCT publication Nos. WO96/33689, published Oct. 31, 1996; WO97/17058, published May 15, 1997; and U.S. Pat. No. 5,505,937 issued to Castrogiovanni et al. Apr. 9, 1996, all incorporated

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herein by reference. Additional film forming polymers suitable for use herein include the water-insoluble polymer materials in aqueous emulsion and water soluble film forming polymers described in PCT publication No. WO98/18431, published May 7, 1998, incorporated herein by reference. Examples of high molecular weight hydrocarbon polymers with viscosities of greater than about 50,000 mPas include polybutene, polybutene terephthalate, polydecene, polycyclopentadiene, and similar linear and branched high molecular weight hydrocarbons.

[0060] Preferred film forming polymers include organosiloxane resins comprising combinations of $R[sub]3SiO[sub]1/2 "M"$ units, $R[sub]2SiO "D"$ units, $RSiO[sub]3/2 "T"$ units, $SiO[sub]2 "Q"$ units in ratios to each other that satisfy the relationship $R[sub]nSiO[sub](4-n)/2$ where n is a value between 1.0 and 1.50 and R is a methyl group. Note that a small amount, up to 5%, of silanol or alkoxy functionality may also be present in the resin structure as a result of processing. The organosiloxane resins must be solid at about 25 degree C. and

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have a molecular weight range of from about 1,000 to about 10,000 grams/mole. The resin is soluble in organic solvents such as toluene, xylene, isoparaffins, and cyclosiloxanes or the volatile carrier, indicating that the resin is not sufficiently crosslinked such that the resin is insoluble in the volatile carrier. Particularly preferred are resins comprising repeating monofunctional or $R[sub]3SiO[sub]1/2 "M"$ units and the quadrafunctional or $SiO[sub]2 "Q"$ units, otherwise known as "MQ" resins as disclosed in U.S. Pat. No. 5,330,747, Krzysik, issued Jul. 19, 1994, incorporated herein by reference. In the present invention the

ratio of the "M" to "Q" functional units is preferably about 0.7 and the value of n is 1.2. Organosiloxane resins such as these are commercially available such as Wacker 803 and 804 available from Wacker Silicones Corporation of Adrian Michigan, and G. E. 1170-002 from the General Electric Company.

[0061] Other materials for enhancing wear or transfer resistance include trimethylated silica. Suitable silicas of this type and

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cosmetic compositions containing them are described in U.S. Pat.
No. 5,800,816 issued to Brieva et al., incorporated herein by reference.

[0062] Emulsifiers. The compositions hereof preferably contain one or more emulsifiers, e.g., to enhance the formation and stability of the emulsion. Compositions of the invention typically comprise from about 0.5% to about 10%, preferably from about 1% to about 5%, more preferably from about 1.5% to about 3% of one or more emulsifiers.

[0063] The hydrophilic-lipophilic balance value of the emulsifier (herein referred to as HLB) is chosen so as to optimally lower the interfacial tension between two phases of significantly different surface tension. Emulsifiers having an HLB ranging from about 4 to about 8 are preferred for use herein. HLB factors are described in Wilkinson and Moore, Harry's Cosmeticology, 7th Ed. 1982, p. 738. and Schick and Fowkes, Surfactant Science Series, Vol. 2, Solvent Properties of Surfactant Solutions, p 607, incorporated herein by reference. Exemplary

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emulsifiers include those disclosed in the C.T.F.A. Cosmetic Ingredient Handbook, 3rd Ed., Cosmetic and Fragrance Assn., Inc., Washington D.C. (1982) pp. 587-592; and Remington's Pharmaceutical Sciences, 15th Ed. 1975, pp. 335-337; and McCutcheon's Volume 1, Emulsifiers & Detergents, 1994, North American Edition, pp. 236-239; all herein incorporated by reference.

[0064] Particularly useful emulsifiers for the present compositions include polydiorganosiloxane-polyoxyalkylene copolymers. Such polymers are described in U.S. Pat. No. 4,268,499, incorporated herein by reference. Suitable copolymers of this type are known and many are available commercially. A preferred emulsifier of this type is known by its CTFA designation as dimethicone copolyol. Preferred emulsifiers also include the surfactants disclosed in U.S. Pat. No. 5,143,722, incorporated herein by reference.

[0065] Another preferred class of emulsifiers are high molecular weight

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polymeric emulsifiers such as are effective for stabilizing glycol/polyol-in-hydrocarbon systems (e.g., Arlacet P135 commercially

available from Unichema).

[0066] Powders. The compositions hereof may comprise one or more powder materials, which are generally defined as dry, particulate matter having a particle size of from 0.001 to 150 microns, preferably 0.01 to 100 microns. The powder materials may be colored or non-colored (e.g., white or essentially clear), and may provide one or more benefits to the composition or skin such as coloration, light diffraction, oil absorption, translucency, opacification, pearlescence, matte appearance, lubricious feel, skin coverage and the like. These materials are well known in the art and are commercially available. Selection of the type and level of a given powder material for a particular purpose in a given product is within the skill of the artisan. Preferred ranges of non-conductive particulate matter are about 0.1 to about 35% of the total composition.

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[0067] Suitable powders include various organic and inorganic pigments which color the composition or skin. Organic pigments are generally various types including azo, indigoid, triphenylmethane, anthraquinone, and xanthine dyes which are designated as D&C and FD&C blues, browns, greens, oranges, reds, yellows, etc. Inorganic pigments are generally insoluble metallic salts of certified color additives, referred to as lakes or iron oxides. Suitable pigments include those generally recognized as safe, and listed in C.T.F.A. Cosmetic Ingredient Handbook, First Edition, Washington D.C. (1988, incorporated herein by reference. Specific examples are red iron oxide, yellow iron oxide, black iron oxide, brown iron oxide, ultramarine, FD&C Red, Nos. 2, 5, 6, 7, 10, 11, 12, 13, 30 and 34; FD&C Yellow No. 5, Red 3, 21, 27, 28, and 33 Aluminum Lakes, Yellow 5, 6, and 10 Aluminum Lakes, Orange 5 Aluminum Lake, Blue 1 Aluminum Lake, Red 6 Barium Lake, Red 7 Calcium Lake, and the like.

[0068] Other useful powder materials include talc, mica, titanated mica

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(mica coated with titanium dioxide), iron oxide titanated mica, magnesium carbonate, calcium carbonate, magnesium silicate, silica (including spherical silica, hydrated silica and silica beads), titanium dioxide, zinc oxide, nylon powder, polyethylene powder, ethylene acrylates copolymer powder, methacrylate powder, polystyrene powder, silk powder, crystalline cellulose, starch, bismuth oxychloride, guanine, kaolin, chalk, diatomaceous earth, microsponges, boron nitride and the like. Additional powders useful herein are described in U.S. Pat. No. 5,505,937 issued to Castrogiovanni et al. Apr. 9, 1996.

[0069] Of the components useful as a matte finishing agents, low luster pigment, talc, polyethylene, hydrated silica, kaolin, titanium dioxide, titanated mica and mixtures thereof are preferred.

[0070] Micas, boron nitride and ethylene acrylates copolymer (e.g., EA-209 from Kobo) are preferred for imparting optical blurring effects through light diffraction and improving skin feel, e.g., by providing a

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lubricious feel. Another particulate material for improving skin feel is SPCAT 12 (a mixture of talc, polyvinylidene copolymer and isopropyl titanium triisostearate).

[0071] Preferred powders for absorbing oil are spherical, nonporous particles, more preferably having a particle size less than 25 microns. Examples of some preferred oil absorbing powders are Cosolin C-100 (a spherical oil absorber commercially available from Englehard), Tospearl (spherical silica commercially available Kobo Industries), ethylene acrylates copolymer such as noted above, and SPCAT 12.

[0072] The powders may be surface treated with one or more agents, e.g., with lecithin, amino acids, mineral oil, silicone oil, or various other agents, which coat the powder surface, for example, to render the particles hydrophobic or hydrophilic. Such treatment may be preferred to improve ease of formulation and stability. Hydrophobically treated powders are preferred in the present compositions, since they are more

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easily dispersed in the external phase. Where the external phase comprises silicone, preferred hydrophobic powder treatments include polysiloxane treatments such as those disclosed in U.S. Pat. No. 5,143,722, incorporated herein by reference.

[0073] It is generally preferred that the conductive internal phase and insulating external phase have different affinities for powders or skin active materials to be deposited on the skin. More preferably, such materials are not dispersible or soluble in the internal phase. For example, a preferred composition comprises a relatively polar and/or high viscosity conductive fluid with relatively non-polar pigments. Without intending to be bound or limited by theory, it is believed that such incompatibility creates voids within a sprayed droplet which result in smaller clusters of pigments within a sprayed droplet, which in turn give the appearance of smaller droplets than what is actually sprayed (that is, the apparent droplet size is smaller than the actual sprayed droplet size). In general, it will therefore be desirable to select pigments and

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conductive materials such that the pigments are minimally wetted by the conductive internal phase.

[0074] In a preferred embodiment the composition is in the form of a cosmetic foundation. As used hereinafter, the term "foundation" refers to a liquid or semi-liquid skin cosmetic which includes, but is not limited to lotions, creams, gels, pastes, and the like. Typically the foundation is used over a large area of the skin, such as over the face, to provide a particular look. Foundation compositions of the invention typically comprise from about 2% to about 20% pigment for coloration, and from about 2% to about 15% of additional non-pigmented

particulates.

[0075] Structuring or thickening agents. Compositions hereof preferably comprise one or more structuring or thickening agents, e.g., to enhance the stability of the composition, preferably upon exposure to the electric field applied during spraying. Preferred agents of this type are

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those which provide thickening or structure to the external phase. The compositions hereof may comprise from about 0.5% to about 50% of such agents.

[0076] Suitable structuring or thickening agents can be selected from the group consisting of silicones, waxes, clays, silicas, salts, natural and synthetic esters, fatty alcohols, and mixtures thereof. Nonlimiting examples of these structuring or thickening agents are described below.

[0077] Suitable silicones include alkyl siloxane gellants, high molecular weight dimethicones (fluids greater than 1000 mPas), and high molecular weight alkyl, hydroxyl, carboxyl, amino, and/or fluoro-substituted dimethicones (fluids greater than 1000 mPas). Preferred silicone gellants are described in U.S. Pat. Nos. 5,654,362 and 5,880,210, and include cyclomethicone and dimethicone crosspolymers (e.g., Dow Corning 9040).

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[0078] Waxes can be defined as lower-melting organic mixtures or compounds of high molecular weight, solid at room temperature and generally similar in composition to fats and oils except that they contain no glycerides. Some are hydrocarbons, others are esters of fatty acids and alcohols. Suitable waxes may be selected from the group consisting of natural waxes including animal waxes, vegetable waxes, and mineral waxes, and synthetic waxes including petroleum waxes, ethylenic polymers, hydrocarbon waxes (e.g., Fischer-Tropsch waxes), ester waxes, silicone waxes, and mixtures thereof. Synthetic waxes include those disclosed in Warth, Chemistry and Technology of Waxes, Part 2, Reinhold Publishing (1956); herein incorporated by reference.

[0079] Specific examples of waxes include beeswax, lanolin wax, shellac wax, carnauba, candelilla, bayberry, jojoba esters, behenic acid waxes (e.g., glyceryl behenate which is available from Gattifosse as Compritol(R)), ozokerite, ceresin, paraffin, microcrystalline waxes, polyethylene homopolymers, polymers comprising ethylene oxide or ethylene

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(e.g., long chained polymers of ethylene oxide combined with a dihydric alcohol, namely polyoxyethylene glycol, such as Carbowax available from Carbide and Carbon Chemicals company; long-chained polymers of ethylene with OH or another stop length grouping at end of chain, including Fischer-Tropsch waxes as disclosed in Warth, supra, at pages 465-469 and

specifically including Rosswax available from Ross Company and PT-0602 available from Astor Wax Company), C₂₄-45 alkyl methicones, C₈ to C₅₀ hydrocarbon waxes, alkylated polyvinyl pyrrolidones (e.g., "Ganex" alkylated polyvinylpyrrolidines available from the ISP Company), fatty alcohols from C₂₀ to C₆₀ (e.g., "Unilins", available from Petrolite Corporation) and mixtures thereof.

[0080] Preferred structuring or thickening agents are those which are substantially inert to distribution of charge through a fluid, e.g., waxes and high molecular weight silicones and hydrocarbons. For example, Versagel from Penreco can be used and is a high molecular weight material.

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[0081] Water dispersible and oil dispersible clays may be useful to provide structure or thickening to the internal or external phase. Suitable clays can be selected, e.g., from montmorillonites, bentonites, hectorites, attapulgites, sepiolites, laponites, silicates and mixtures thereof.

[0082] Suitable water dispersible clays include bentonite and hectorite (such as Bentone EW, LT from Rheox); magnesium aluminum silicate (such as Veegum from Vanderbilt Co.); attapulgite (such as Attasorb or Pharamasorb from Engelhard, Inc.); laponite and montmorillonite (such as Gelwhite from ECC America); and mixtures thereof.

[0083] Oil-dispersible clays are preferred. Suitable oil dispersible clays include organophilically modified bentonites, hectorites and attapulgites. Specific commercially available examples of these clays include Bentone 34 (Rheox Corp.)-Quaternium-18 Bentonite; Tixogel VP (United Catalysts)-Quaternium-18 Bentonite; Bentone 38 (Rheox

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Corp.)-Quaternium-18 Hectorite; Bentone SD-3 (Rheox Corp.)-Dihydrogenated Tallow Benzyllonium Hectorite; Bentone 27 (Rheox Corp.)-Stearalkonium Hectorite; Tixogel LG (United Catalysts)-Stearalkonium Bentonite; Claytone 34 (Southern Clay) Quaternium-18 Bentonite; Claytone 40 (Southern Clay) Quaternium-18 Bentonite; Claytone AF (Southern Clay) Stearalkonium Bentonite; Claytone APA (Southern Clay) Stearalkonium Bentonite; Claytone GR (Southern Clay) Quaternium-18/Benzalkonium Bentonite; Claytone HT (Southern Clay) Quaternium-18/Benzalkonium Bentonite; Claytone PS (Southern Clay) Quaternium-18/Benzalkonium Bentonite; Claytone XL (Southern Clay) Quaternium-18 Bentonite; and Vistrol 1265 (Cimbar)-Organophilic Attapulgite. These organophilic clays can be purchased as pre-dispersed organophilic clay in either an oil or an organic solvent. The materials are in the form of a heavy paste that can be readily dispersed into the formulation. Such materials include Mastergels by Rheox, United Catalysts, and Southern Clay.

[0084] Other structuring or thickening agents include fumed silicones and

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alkali metal or ammonium halides. Examples of fumed silicas include Aerosil 200, Aerosil 300 and the alkyl-substituted fumed silicas such as the Aerosil R-100, 200, 800, and 900 series of materials, all available from the Degussa Corporation.

[0085] Preferred structuring or thickening agents are those which are substantially inert to the distribution of charge through a fluid, e.g., waxes and high molecular weight silicones and hydrocarbons.

[0086] Product Forms and Particular Compositions

[0087] The compositions of the invention can be adapted to a variety of product forms, including pigmented and non-pigmented skin care compositions, e.g., lotions, creams, moisturizers, foundations, blush, eye shadow, self-tanning products, touch-up products (e.g., for oil/shine control), and chemical peels. Such compositions may comprise a volatile insulating and conductive material, one or more powders and/or skin

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treatment actives, and optionally one or more of the above described additional materials. Lotions, creams and moisturizers will typically include one or more of humectant, nonvolatile oil, emulsifier, preservative, powder material, and structuring agent or thickener. Examples of nonvolatile oils are described in U.S. Pat. No. 5,800,816. Such compositions may also comprise an effective amount of prophylactic or therapeutic skin ingredient care ingredient, e.g., selected from oil/shine control actives, desquamation actives, anti-acne actives, anti-inflammatory actives, skin bleaching or lightening actives, skin-feel agents, skin repair ingredients, sunscreens, sunblocks, and vitamins or derivatives thereof. Color cosmetics such as foundations, blush, and eye shadows may contain one or more ingredients as for lotions, creams and moisturizers, and will contain a powder for coloration.

[0088] Particularly preferred compositions comprise:

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[0089] (a) from about 5% to about 70% of a liquid insulating material;

[0090] (b) from about 5% to about 65% of a liquid conductive material;

[0091] (c) from about 0.5% to about 30% of a particulate material which is insoluble and immiscible in the composition; and optionally one or more of:

[0092] (d) from about 0% to about 20% of a structuring agent or thickener for stabilizing the composition;

[0093] (e) from about 0.1% to about 20% of an emulsifier; and

[0094] (f) from about 0.5% to about 20% of a material for imparting wear or transfer resistance.

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Methods of Use
[0095] Electrostatic Spray Techniques

[0096] The compositions hereof are suitably directly applied to the skin by electrostatic spray techniques. In general, this method involves raising the composition to be sprayed to a high electric potential in a spray nozzle to cause the composition to atomize as a spray of electrically charged droplets. The electrically charged droplets seek the closest earthed object to discharge their electric charge, which can be arranged to be the desired spray target.

[0097] For use in the present invention, the hardware and electrical componentry and circuitry may be of any suitable construction and design. The art of electrostatic spraying contains many examples of suitable apparatus which may be used in the present invention and such disclosures of such apparatus or particular features thereof may be applied either singly or in combination to the spray systems of the present invention.

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Examples of suitable electrostatic spraying hardware include those described in the following publications: U.S. Pat. Nos. 4,549,243; 4,561,037; 4,663,639; 4,854,506; 4,846,407; 5,121,884; 5,222,663; 5,222,664; 5,221,050; 5,290,600; 5,337,963; 5,292,067; 5,490,633; 5,184,778; 5,503,335; 5,684,666; and 4,776,515; Japanese patent No. 1,932,551; JP-A-56-97214; Canadian Patent Application No. 2018551-1; GB-A-1393333; GB-A-15697007; GB-A-2092025; GB-A-2061769; GB-A-2073052; Taiwanese Patent No. NI-64734; EPO Application No. 94924355.4 (Publication No. 716626); EPO Application No. 95915955.9 (Publication No. 748256); EPO Application No. 95916790.9 (Publication No. 748257); EPO Application No. 94931643.4 (Publication No. 789626); EPO Application No. 95932065.6 (Publication No. 776253); EPO Application No. 95932063.1 (Publication No. 785823); EP-A-029301; EP-A-253539; EP-A-224352; EP-A-031649; EP-A-132062; EP-A-163390; EP-A-171184; EP-A-234842; EP-A-243031; EP-A-368494; EP-A-441501; EP-A-468735; EP-A-468736; PCT Application No. GB96/01286 (Publication No. 096/40441); PCT Application No. GB97/00376 (Publication No. 097/31718); PCT Application No.

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GB97/02746; and WO-A-85/00761; all incorporated herein by reference in their entirety. Preferred electrostatic spray devices are disclosed in copending, commonly assigned U.S. patent application Ser. No. 09/377,333, entitled "Hand-Held Electrostatic Sprayer Apparatus" filed in the names of Chinto B. Gaw et al. on Aug. 18, 1999; and Ser. No. 09/377,332, entitled "Disposable Cartridge for Use in a Hand-Held Electrostatic Sprayer Apparatus" filed in the name of Chinto B. Gaw et al. on Aug. 18, 1999, both incorporated herein by reference.

[0098] Preferred devices include an apparatus suitable for small-scale personal use which has a reservoir for containing the topical composition, at least one delivery means, e.g., a nozzle, in communication with the reservoir; a high voltage generator generating voltage in the range of 1 to 26 kilovolts (e.g., from 12 to 26 kilovolts) powered from a portable or non-portable (preferably portable) electricity source; and control means for selectively applying the high voltage from the generator to the at least one delivery means. In use, the control

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means is actuated to electrostatically spray the topical composition from the at least one delivery means directly onto the skin at an intended site.

[0099] As will be appreciated by persons skilled in the art, particular constructional features and design and electrical and other operating parameters of such apparatuses may be selected or adjusted as necessary, in the context of the present invention, in accordance with the desired functioning characteristics, as for example dictated by the composition to be sprayed and/or the needs or wishes of a user. Features of the apparatus of the present invention which may be so selected and/or adjusted include for example: voltage generated by the high voltage generator and power source, electric field strength in or in the region of the product delivery means, flow rate of the product to be sprayed from the reservoir to and out of the delivery means, size and configuration of the delivery means itself and construction and properties of any product feed mechanism utilized between the reservoir

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and the output of the delivery means.

[0100] The size and configuration of the one or more delivery means in the apparatus of the invention may be of any suitable form and again may be selected in association with other parameters to give an optimized functioning electrostatic spray delivery system. Commonly the or each delivery means will be in the form of a nozzle, preferably of insulating or semi-insulating material such as plastics or various polymers, as is well known in the art. In one preferred form of nozzle, a conduit for carrying the product to be sprayed terminates in an orifice at the tip of the nozzle, from which orifice the product is ejected for example initially as a ligament but in any event eventually dispersing as a spray of charged droplets. The orifice preferably has a diameter of not greater than about 800 microns (e.g., from 508-762 microns or 0.020"-0.030"). Even more preferably the orifice has a diameter of from about 500 to about 750 microns.

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[0101] The delivery means may advantageously include metering means to provide a dosing mechanism for delivering a predetermined fixed amount of

material from the or each nozzle. Such an expedient may for example be useful in conjunction with a system having a controlled flow rate. In preferred embodiments of the apparatus of the invention, the or each delivery means is in communication, i.e. preferably fluid communication, with the reservoir or reservoirs (if for example more than one material or composition is to be desired to be sprayed from the same apparatus or even the same delivery means) by virtue of product feed means. In one preferred form, such feed means may comprise an insulator having a channel between the nozzle and the product reservoir, through which the product to be sprayed flows before reaching the point of high electric field strength where it is dispersed as a charged spray of droplets or particles. In another preferred form the feed means may comprise a hollow conduit through which the composition passes under the effect of capillary action.

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[0102] As is well known in the art, the apparatus according to the invention preferably includes a trigger (i.e. a manual control means) or alternatively an automatic control means to selectively apply the high voltage from the generator to the or each delivery means to electrostatically spray the composition onto the skin. Any other suitable control means however, e.g. which automatically control actuation of the system, may be used, as will be appreciated by persons skilled in the art.

[0103] In preferred embodiments of the invention, voltages generated by the high voltage generator from the power source are in the range of from about 1 to about 26 kilovolts, more preferably from about 6 to about 20 kilovolts. The most suitable voltage for a given system may depend upon the product to be sprayed, as well as other parameters, all of which will generally be selected to give an overall optimized system. Voltage may be applied at constant positive or alternating polarity, however positive polarity is preferred.

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[0104] Electric field strengths which are responsible for the spraying action of the electrostatic apparatus will be largely dependent upon the voltage applied. However, field strengths may be controlled or adjusted if necessary, for example by changes in nozzle configuration or geometry and/or the use of field intensifying electrodes, which are well known in the art cited above.

[0105] The deposition of the composition on the skin, including spray droplet size and spacing and skin coverage, is influenced by the product spray flow rate, the rate of product application to the skin, and the amount of product applied to the skin. In general, droplet size increases with increasing resistivity, decreasing voltage, and increasing flow rate, spacing increases with increasing voltage and decreasing deposition amount, and coverage increases with increasing flow rate and increasing deposition amount.

[0106] Optimum flow rates of material to be sprayed will generally

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depend upon the composition of the product itself, and may be selected appropriately on that basis preferably so as to avoid sensory negatives. Also, as already mentioned with respect to viscosity of the sprayable material, a suitable flow rate may be selected depending upon the particular delivery regime and/or habit or needs of a user. Generally it will be desired to utilize lower flow rates with concentrated materials in order to better control the deposition of the composition. By way of example, preferred flow rates of compositions for delivery in accordance with embodiments of the invention are in the range of from about 0.036 to about 1800 ml/hr (0.00001 to about 0.5 ml/sec), more preferably from about 0.1 to about 360 ml/hr (0.0001 to about 0.1 ml/sec), even more preferably from about 0.1 to 100 ml/hr, most preferably from about 1 to about 30 ml/hr per the delivery means. Particularly preferred applications utilize a higher speed flow rate of from about 4 to about 18 ml/hr (preferably about 9 ml/hr), and a lower speed flow rate of from about 2.4 to about 10.8 ml/hr (preferably about 7.2 ml/hr), where the low speed is about 0.2 to 0.8 times the high speed.

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[0107] In general, as the flow rate increases it will be desired to utilize a higher voltage in order to provide optimal sprayability and small sprayed droplet sizes. In a preferred embodiment, the composition is sprayed at a flow rate of from about 0.1 to about 100 ml/hr, a voltage of from about 1 kV to about 26 kV (preferably about 1 kV to about 20 kV), and an application rate of from about 0.01 mg composition/cm² of skin to about 12 mg composition/cm² of skin. Relatively high solids compositions such as foundations are typically applied at a rate of about 1 mg/cm² skin; relatively low solids compositions such as skin lotions are typically applied at a rate of about 5 to 6 mg/cm² skin. Relatively low solids compositions such as skin lotions are typically delivered at a flow rate of from about 50 to about 60 ml/hr. Relatively high solids compositions such as foundations are preferably electrostatically sprayed at said application rate, at a flow rate of from about 1 to about 30 ml/hr and a voltage of from about 6 kV to about 20 kV. A voltage range of from about 3 kV to about 20 kV is preferred.

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[0108] Total product application amounts, in terms of amount of product sprayed per cm² skin, is typically less than about 6 mg/cm². An exemplary application amount is about 0.8 mg/cm², which tends to provide about 30-40% skin coverage.

[0109] The product is typically applied at a rate of 0.005 sec/cm² skin area to 6 sec/cm² skin area, more preferably rate of 0.01 sec/cm² skin area to 3 sec/cm² skin area, most preferably rate of 0.05 sec/cm² skin area to 2 sec/cm² skin area.

[0110] Preferred Usage Instructions for Electrostatic Application

[0111] Electrostatic compositions may be applied by a second party

(including robotic means) or the end-user of the composition. The present invention also relates to instructions for using an electrostatic spray device to apply topical compositions to the face, especially foundation compositions, and especially second-party and self-application

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techniques, context, and methods of training self-application.

[0112] a) Application Techniques

[0113] It has been found that improved results are achieved by observing certain directions relating to distance of the device (particularly the nozzle) from the target application area (the face), the rate of application of product to the skin (including flow rate and device speed settings), and motion of the device during application (including the direction and character of the motion).

[0114] In use, the device is held or otherwise positioned so as to efficiently deliver the spray to the target facial area and to avoid obstruction of the spray.

[0115] In general, the device is held or positioned sufficiently distant from the target such that the spray pattern spreads sufficiently

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and does not tend to form lines or other undesirable concentrated effects on the target substrate, and close enough such that the spray adequately grounds to the target so as to deliver optimum coverage and even-ness of laydown. Typically, the device is held or positioned such that the nozzle is from about 3-4 inches (9-13 cm) from the target facial area.

[0116] During self-application, it is best to keep one or both eyes open when applying to areas of the face below the nose, and closed when applying to areas of the face above the nose. When self-applying while the eyes are closed, it can be helpful to appropriately judge the distance with which to hold the device from the face, by first stretching the arm all the way out straight (until the feel of the spray mist on the face can no longer be felt clearly) and then bending the elbow to bring the device closer, slowly, until the spray mist is first clearly felt. This typically leads to ensuring that the device stays about 3-4 inches from the applier's face.

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[0117] For improved even-ness of coverage, the device should be kept moving during application, preferably at a steady pace with a sweeping motion, without stopping in place while the device is operating. In general, the preferred pace is such that in one second one can usually transverse the forehead, or make two passes over a single cheek, depending on the facial size. The swath areas may be partially overlapped, such as occurs with a Zamboni smoothing ice. In a typical

60-90 second application, each facial area is typically passed over 2-8 times.

[0118] In a preferred technique, the composition is applied following the contours of the face and in four sections. First, smooth horizontal strokes are made across the forehead. Product is then applied to each side of the face utilizing back and forth sweeping, semi-circular motions following the natural contours of the cheekbone working down to the chin from the side of the face to the center of the face. While applying to the cheeks, it is important to avoid the fourth region, the nose, which

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is preferably sprayed last since its relative height tends to preferably attract spray. The nose is then sprayed, if needed, along with the area above the upper lip. Where the wearer has visible facial hair, it may be preferred to tilt the nozzle slightly downward to minimize accentuating the visibility of the hair. Also, when first self-applying it is preferred to begin with the jaw line and work "up" the face until one becomes more comfortable with the application process. This allows the wearer to keep her eyes open initially and see where the spray is going on the face, and helps for judging how far away from the face she may be with the device.

[0119] Improved results have also been found where the applicant utilizes two or more speeds such as described above for applying the product. The preferred use is typically to use a faster speed (higher flow rate) for all-over-face coverage and a slower speed for spot coverage. Preferred is a higher speed flow rate of from about 4 to about 18 ml/hr (preferably about 9 ml/hr), and a lower speed flow rate of from

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about 2.4 to about 10.8 ml/hr (preferably about 7.2 ml/hr), where the low speed is about 0.2 to 0.8 times the high speed. The slow speed allows a more controlled build up of coverage in a specified area without unintentional overapplication. In general, the application process is designed so as to avoid overapplication, resulting in an unnatural look and/or uneven application, but to provide sufficient coverage. It can be helpful for a second party to first view the user with their typical facial makeup in order to identify likely coverage objectives. It is also helpful to utilize a stepwise application, involving at least one sequence of overall application and optionally spot coverage, so that the applicant or user can titrate to the desired appearance.

[0120] A typical application process involves the following steps:

[0000]

[0121] 1) Apply all over the face using a relatively fast speed/flow

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rate designed to apply product at a rate of about 9 milliliters/hour;

[0122] 2) judge whether or not more coverage is needed, and if so where and how much more;

[0123] 3a) If more product is desired in "spot" areas, e.g., age spots, acne, red areas, dark areas, apply additional spray to the specific areas defined using a slow speed/flow rate designed to apply about 5-7 milliliters/hour;

[0124] 3b) If more product is desired "all-over", repeat step (1);

[0125] 4) Iterate Steps 2 and 3 until the desired coverage is obtained.

[0126] The overall time for application tends to be from about 0.5 to 3 minutes (generally from about 60 to about 90 seconds).

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[0127] b) Context

[0128] When instructing someone to apply product either to themselves or others, it has been found that the context with which the first application or demonstration is made is very important to help the end-user feel comfortable and positive about the application experience. The context is preferably designed to provide the user with visible and tactile expectations. It preferably includes the steps of reviewing safety, explaining how the spray works, and demonstrating how the spray works.

[0129] More particularly, the safety of the composition, device and method is reviewed, typically including a recommendation to keep eyes closed when spraying above the nostrils as an added safety level. Any eye, inhalation, grounding/electrical safety or other concerns which the user may have are addressed.

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[0130] How the spray works is generally explained, for example, by explaining that the product is a fine mist of product droplets that are charged so that they stay separated during application and are uniquely attracted to the face versus non-target areas such as the hair, clothing, etc., yet needs no blending. Demonstrating how the spray works preferably includes showing how to hold the device (e.g., by resting it between the thumb and fore finger), and how to activate the device (e.g., by pressing the on/off button with your fore-finger, preferably instructing to keep fingers away from the nozzle. A useful demonstration before actual use involves providing a visible expectation (i.e., how the product comes out of the device), e.g., by spraying on a piece of paper, paper towel, non-target skin (e.g., hand or arm) or the like, and providing a tactile expectation, e.g., by spraying on non-target skin to show how the spray feels on the skin. The user should understand that the product is emitted as a fine, uniform spray or mist that needs no blending into the skin, which is very light in feel. The user should also preferably understand that the mist generally forms a circular, versus linear (jets) pattern

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and that the swath diameter is proportional to the distance of the device from the face.

[0131] Other means may be provided to enhance the user's experience, e.g., music or other audio effects, flowers, aromatherapy, massage, or other known means of promoting relaxation.

[0132] c) Self-Application Training

[0133] Where the user intends to self-apply the product, the learning curve for self-applying the composition is also important to user satisfaction. Preferred training involves at least a step of joint application by the user and a second party. More preferred training methods allow the user to gradually become familiar with the techniques, and involve a sequence of steps comprising application by a second party, joint application by the user and a second party, and full application by the user with optional assistance of a second party or instructional

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materials. The steps are preferably performed on different days, more preferably on consecutive days. However, the steps may be performed on the same day and optionally immediately following each other if it is practical and provided that cleansing of the user's skin between steps does not cause negative effects.

[0134] One preferred method of training is a 3-5 day training period during which the user gradually becomes comfortable with self-application:

[0135] (1) On the first day, a second party applies the product to the end-user.

[0136] (2) On the second day, the second party applies product to half the end-user's face and then the end-user completes the application with personalized guidance from the second party and/or instructional aids such as a usage pamphlet and/or a video of others self-applying the

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product. The second party or instructional aid preferably reminds the end user of the proper device distance, speed, the desirability of keeping the eyes closed as described above, and other helpful suggestions such as described above, e.g., such as beginning with the jaw line and working "up" the face until becoming more comfortable with the application process.

[0137] (3) On the third day, the end-user applies full face product with optional guidance from the second party and/or instructional materials.

[0138] (4) On optional fourth and fifth days, the third day procedure is repeated.

[0139] When it is desirable to demonstrate self-application with a single demonstration, the preferred method is to follow the above instructions for the second day.

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[0140] The self-application learning curve preferably involves three elements of expectation or context, technique or application, and confidence. Expectation/context involves addressing any safety concerns and describing the product which comes out of the device. Technique/application involves application techniques, including how to hold/handle the device and instructions regarding proper distance from the face, amount of product to apply, how long to apply, hand motion, and application speeds. Confidence involves allowing the user to practice applying the product, optionally with assistance from a second party or other instructional aids. Preferred aspects of these elements is as described herein above.

[0141] Other Topical Application Methods

[0142] The topical compositions can alternatively be applied to the skin to form the discontinuous films by silk screen techniques or the like, and additionally by using application techniques which provide

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product deposition via the use of normal forces (i.e., forces perpendicular to skin surface).

[0143] In the first method, a piece of plastic, metal, cloth or other mesh (preferably conformable to facial contours), with evenly spaced holes/pores of about 150 microns or less in diameter is placed against the skin. Then topical composition, e.g., a pigmented foundation, is pressed through the holes in the mesh to deposit the same pattern of droplets on the skin which exists in the pores of the mesh. One convenient way to press the fluid through the mesh is to first absorb it into a sponge, cloth or other absorbent material and then to press the soaked sponge or other material against the mesh. Another means of accomplishing this is to spread or draw the fluid across the mesh with a stiff-edged product such as a rubber squeegee, much like spackling a wall. After the product is pressed through the mesh, the mesh is removed, and cleaned if desired for re-use. The mesh is then moved to any bordering, uncovered areas and the process is repeated as many times as

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necessary to complete application of the target area. Once the fluid on the skin has dried, if applicable, the process may be repeated by placing the mesh back over the areas where product is already deposited, and orienting the mesh at a different angle to minimize the potential for

overlapping droplets. This re-application process will allow for tighter particle spacing than inherently exists in the mesh, if desired.

[0144] Any type mesh which allows for a deposition with the desirable size and spacing pattern described herein may be used. Examples of such materials include microapertured formed films as are described in U.S. Pat. No. 4,342,314, issued to Radel et al. on Aug. 3, 1982 and U.S. Pat. No. 4,629,643 issued to Curro et al. on Dec. 16, 1986, both of which are herein incorporated by reference in their entirety. As is described in these references, suitable materials for these formed films are preferably polyolefins, e.g., polyester. Preferable mesh hole size and spacing is equivalent to the desired end discontinuous film particle size and spacing.

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[0145] Alternatively, the discontinuous deposition pattern is achieved without the use of a mesh or screen, but rather is accomplished through the use of a porous material with pores which are less than about 150 microns in diameter. The porous structure may comprise open cells, closed cells, or some combination thereof. The term "cells", as used herein, refers to the 3-dimensional voids present in the material which may, or may not have interstitial openings which would connect the voids to one another. In one embodiment, the fluid topical skin product is absorbed into the porous material and then "blotted" onto the skin using forces perpendicular to the skin (as opposed to tangential, or shearing forces). This application technique uses the pore size and pore spacing of the material to create the discontinuous deposition pattern.

[0146] Such porous materials can be created by techniques which include, but are not limited to:

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[0147] 1) seeding mechanisms in which the pores are created by incorporating a physical material which is later extracted, destroyed, removed, or decays after the structure is formed, examples of such materials include elastomeric rubber structures manufactured by the Porelon and MicroFoam Companies such as Porlon and Microfoam brand materials which are described in U.S. Pat. Nos. 3,971,315 and 4,824,621, both of which are herein incorporated by reference in their entirety;

[0148] 2) aerating (i.e., incorporating air or inert gases into) polymeric materials via mechanical shearing, high pressure (e.g., forced air), or the like, examples include foams of synthetic latex nitriles produced Latex Foam Products, Inc. (LFP) such as "NBR", "SBR", or "SK" type materials;

[0149] 3) using emulsion chemistry and processing techniques to control the pore size and density-examples of such materials include polyurethane foams produced by the Lendell corporation, or flexible microcellular

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foams such as those cited in U.S. Pat. Nos. 5,260,345 and 4,522,953, both of which are herein incorporated by reference in their entirety.

[0150] 4) sintering powder particulates of various sizes to create the desired pore size and density-examples of such materials which utilize particulates of high density polyethylene, polypropylene, or nylon and are produced by the Porex Technologies Corporation (e.g. Porex X4900 and X4800 series in coarse sheets or custom-molded parts).

[0151] In another variation on the use of porous materials to create a discontinuous pattern, a continuous or discontinuous film of fluid is applied to the skin and the porous material (as described above) is subsequently blotted onto the continuous film to remove fluid from the skin surface by absorbing the fluid into the pores of the material. The discontinuous pattern, in this case, is formed by and corresponds to the structural pattern of the polymeric material which separates the pores. In this example, the spacing of polymeric material which separates the

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pores should be less than 150 microns in effective diameter. The phrase "effective diameter", as used herein, refers to the diameter of a circle with an area equal to the area of the irregularly shaped region of interest.

[0152] In yet another execution, the discontinuous pattern is created by blotting non-porous materials with a relief texture in which the raised areas of the texture do not exceed 150 microns in effective diameter. In this execution the nonporous, textured material is blotted into a fluid reservoir (much like an ink pad), imparting the fluid product onto the raised textured areas of the non-porous substrate. The substrate is then blotted onto the skin (using forces normal to the skin) and the raised textured pattern of the nonporous material is transferred to the skin surface.

[0153] In still another execution, the discontinuous pattern is created by blotting non-porous materials with a relief texture where the relieved

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areas of the texture do not exceed 150 microns in effective diameter. The phrase relief texture or relieved areas, as used herein, refers to the depressed areas of the textured surface or textures formed by such depressed areas or regions. In this execution the nonporous, textured material is blotted into a fluid reservoir, imparting the fluid product onto all surfaces of the substrate (both raised and depressed). The fluid product on the raised areas is then removed through a secondary process such wiping, absorbing, evaporating, or the like. The substrate is then blotted onto the skin (using forces normal to the skin) and the depressed textured pattern of the nonporous material is transferred to the skin surface.

EXAMPLES

[0154] The following examples are representative but non-limiting of the invention.

Examples 1-5

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[0155] Cosmetic foundations are made by combining the following ingredients:

[0156]

(Table 00001. See patent image)

[0157] Combine the Group A ingredients and mix well with a homogenizer set at 2000-4000 rpm. Add the Group B ingredients. During addition mix at 5000-7500 rpm, when addition is complete set mixing speed to 8000-10000 rpm. Do not let temperature rise above 40 C during mixing. After 30 minutes of mixing check the particle size with a Hegman gauge or glass slides. If the sample has an acceptable particle size (i.e. less than 30 microns), mix in Part C at a mixing speed of 5000-7500 rpm. Keep temperature in 20 C-40 C range. Assist with hand mixing if necessary. After 15 minutes of mixing, raise mixing speed to 7500-10000 rpm. Slowly add Part D ingredients at a rate of 30-40 g/minute. Keep the temperature

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at 45 C or less (ideally temperature should be from 20-40 C). After addition is complete mix at 5000 rpm-7500 rpm for about 10 minutes. After 10 minutes allow to reach ambient conditions and pour into appropriate container.

Examples 6-13

[0158] Cosmetic foundations are made by combining the following ingredients:

[0159]

(Table 00002. See patent image)

[0160] Combine Group A ingredients and mix well with a homogenizer set at 2000- 4000 rpm. Add Group B ingredients. During addition mix at 5000-7500 rpm, when addition complete set mixing speed to 8000-10000 rpm. Do not let temperature rise above 40 C during mixing. After 30 minutes of

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mixing check particle size with Hegman gauge or glass slides. If the sample has an acceptable particle size (i.e. less than 30 microns), raise mixing speed to 7500-10000 rpm. Slowly add Part C. After 15 minutes of mixing at 5000-7500 rpm, raise the temperature slowly to 35-40 C. When the temperature has equilibrated, slowly add Part D. The mixing speed should be 5000-7500 rpm for 10 minutes. Slowly decrease temperature to 20

C-35 C, then raise mixing speed to 7500-10000 rpm. Add Part E at approximately 30-40 g/minute. Keep the temperature at 45 C or less (ideally temperature should be from 20-40 C). After addition is complete mix at 5000 rpm-7500 rpm for about 10 minutes. After 10 minutes allow to reach ambient conditions and pour into appropriate container.

Example 14
[0161] A cosmetic blush is made by combining the following ingredients:

[0162]

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(Table 00003. See patent image)

[0163] Prepare as for Examples 6-13.

Example 15
[0164] A spray useful for preventing or reducing skin shine is made by combining the following ingredients:

[0165]

(Table 00004. See patent image)

[0166] Prepare as for Examples 6-13.

Example 16
[0167] A topical composition for improving skin texture (e.g., reducing the visibility of lines, wrinkles) is made by combining the following

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ingredients:

[0168]

(Table 00005. See patent image)

[0169] Prepare as for Examples 1-5.

[0170] The products of Examples 1-16 are electrostatically sprayed to the face in accordance with the description herein.

Exemplary or Independent Claim(s):

1. A method of topically applying a topical emulsion composition formed prior to spraying comprising electrostatically spraying the emulsion composition onto the skin, wherein the emulsion comprises:
 - a) from about 5% to about 75% of an insulating external phase comprising one or more liquid insulating materials; and

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b) from about 15% to about 80% of a conductive internal phase comprising one or more conductive materials, wherein the topical emulsion composition is a two-phase composition that does not form electrical continuity between the insulating external phase and the conductive internal phase.

Non-exemplary or Dependent Claim(s):

2. A method according to claim 1 wherein the composition comprises from about 15% to about 70% of the insulating external phase and from about 20% to about 75% of the conductive internal phase.
3. A method according to claim 1 wherein the composition comprises from about 20% to about 60% of the insulating external phase and from about 30% to about 70% of the conductive internal phase.
4. A method according to claim 1 wherein the weight ratio of insulating external phase to conductive internal phase is about 0.2:1 to 8:1.
5. A method according to claim 1 wherein the insulating external phase has a viscosity of about 10,000 cSt or less.

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6. A method according to claim 1 wherein the insulating material of the external phase is selected from the group consisting of volatile silicones, volatile hydrocarbons, and mixtures thereof.
7. A method according to claim 6 wherein the insulating material comprises a cyclic polyalkylsiloxane having the formula $[SiR_{2-}O]_n$ wherein R is methyl and n is an integer of from about 4 to about 6.
8. A method according to claim 6 wherein the insulating material comprises C₈ to C₂₀ isoparaffin.
9. A method according to claim 8 wherein the isoparaffin is isododecane, isohexadecane isooctacosane, or a mixture thereof.
10. A method according to any of the preceding claims wherein the conductive internal phase comprises one or more liquid conductive materials.
11. A method according to claim 10 wherein the conductive material of the internal phase is selected from the group consisting of water, alcohols, glycols, polyols, ketones and mixtures thereof.

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12. A method according to claim 10 wherein the conductive material of the internal phase is selected from the group consisting of alcohols, glycols, polyols and mixtures thereof.
13. A method according to claim 10 wherein the conductive material of the internal phase is selected from the group consisting of propylene glycol, butylene glycol, dipropylene glycol, phenyl ethyl alcohol, ethanol, isopropyl alcohol, glycerin, 1,3-butanediol, 1,2-propane diol, isoprene glycol, water, acetone, and mixtures thereof.
14. A method according to claim 10 wherein the conductive material of the internal phase is selected from the group consisting of propylene glycol, butylene glycol, ethanol, glycerin, water, and mixtures thereof.
15. A method according to claim 10 wherein the conductive material of the internal phase is selected from the group consisting of propylene glycol, ethanol, and mixtures thereof.

16. A method according to claim 10 wherein the conductive material of the internal phase is propylene glycol.

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17. A method according to claim 1 wherein the composition comprises about 35 weight % or less solids.
18. A method according to claim 1 wherein the composition comprises one or more ingredients selected from the group consisting of materials which impart film forming or substantive properties, powders, skin feel ingredients, emulsifiers, and structuring or thickening agents.
19. A method according to claim 1 wherein the composition is a cosmetic foundation.
20. A method according to claim 1 wherein the composition is electrostatically sprayed at a flow rate of from about 0.1 to about 100 ml/hr, a voltage of from about 1 kV to about 20 kV, and an application rate of from about 0.01 mg composition/cm² skin to about 12 mg composition/cm² skin.
21. A method according to claim 20 wherein the composition is electrostatically sprayed at a flow rate of from about 1 to about 30 ml/hr and a voltage of from about 6 kV to about 20 kV.

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6318748 **IMAGE Available

Derwent Accession: 2002-382789

UTILITY

Flexible support for gel wraps

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	Publication Number	Kind	Date	Application Number	Filing Date
Main Patent	US 6963019	B2	20051108	US 2001931974	20010817

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Examiner Field of Search (US): 602058; 602075; 602077; 602053; 602060;

602074; 602076; 602048; 602078; D24189; 424445

International Classification (Edition 7): A61F-013/00

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Fulltext Word Count: 2537

Number of Claims: 2

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Exemplary or Independent Claim Number(s): 1
Number of Drawing Sheets: 6

Number of Figures: 8
Number of US cited patent references: 21
Number of non-patent cited references: 3

References to Related Applications:

[0001] This application claims the benefit of U.S. Provisional Application 60/226,602, filed Aug. 21, 2000.

Abstract:

[00000] A two-ply bandage for treatment of skin while providing orthopedic support having a first layer of gel for contacting the skin and a second layer of an elastic and supportive loop portion of a hook and loop fastener. The product is economically manufactured in the form of long rolls or as a sheet and is easily cut to any desired shape.

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Summary of the Invention:

BACKGROUND OF THE INVENTION

[0002] The present invention relates to a medical or surgical bandage suitable for use in providing musculo-skeletal support and treatment of skin conditions. In particular, the invention relates to positioning a gel against the skin utilizing a stretchable bandage that also provides the added benefit of orthopedic, or musculo-skeletal, support for the joint or portion of the body on which the bandage is wrapped.

SUMMARY OF THE INVENTION

[0003] More specifically, this invention relates to a composite material consisting of two layers; a layer of gel bonded to a stretchable carrier layer of a rigid and elastic loop portion of a hook and loop fastener. The stretch carrier layer is useful for positioning the gel layer in place on the body while at the same time providing substantial musculo-skeletal support to the portion of the body around which the bandage is wrapped.

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[0004] This invention relates to a composite structure which incorporates the pressure therapy features of a rigid yet stretchable carrier material with a silicone gel for treatment of skin conditions. Silicone gel materials are used in the medical field for the management of such conditions, for example, as dermal scarring, varicose veins and stasis ulcers. These silicone materials soften scar tissue and improve the cosmetic as well as functional aspects of scars for instance.

[0005] There is a need in the medical and veterinary fields to combine supportive (pressure) therapy with a gel treatment, particularly on the extremities of the body. In the case of veterinary applications, fur is used herein interchangeably with skin. Supportive pressure therapy is useful, for example, to provide musculo-skeletal support for joints and muscles, and in the treatment of carpal tunnel syndrome, arthritis and tennis elbow. This is not easy or convenient under present methods. Typically in the medical and veterinary fields supportive pressure

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therapy is provided using compression garments or wraps. When used with a gel, a person must typically apply a layer of gel to the area of the body to be treated followed by wrapping another material such as a compression garment or wrap to keep the gel in position. The materials typically used don't provide the elastic support usually desired and therefore require many wraps of the material. Furthermore, typical materials lose much of their elasticity after only a couple of uses.

[0006] Hook and loop fasteners are now available with rigid yet stretchable loop portions that have a modulus of elasticity of about 50%, with no stretch memory. The strong elastic property provided by the stretchable loop portion makes it possible for a bandage using this material to be wrapped only once around a part of the body while maintaining contact with the skin to be treated. By applying a surface layer of silicone gel to the flat side (non-loop surface) of a stretchable loop portion of a hook and loop fastener, it was discovered that bandages can be produced which provide a surface layer of silicone

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for uniform skin contact with the added benefit of musculo-skeletal support. The bandage of this invention having a stretchable loop portion as the carrier layer for the gel can therefore follow the many shapes and anatomical contours of the body while at the same time providing secure positioning of the gel on the skin of the user. The combination of stretch carrier and gel layer provides greater comfort to the user because the bandage allows for movement and flexing of the body without reduction in the bandages effectiveness, i.e. support and resistance to slipping. Thus, the support provided by this invention offers the wearer of the bandage greater comfort and durability and makes for the ideal bandage for repeated usage and/or usage over long periods of time.

[0007] This invention is an improvement over the prior art in that (a) the carrier material is rigid and elastic so that substantial orthopedic support (i.e., musculo-skeletal support) is provided by just a one layer wrapping, (b) the product is far more durable than Lycra(R) and

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other known, thin elastic based products commonly available, (c) both pressure and silicone therapies may be applied concomitantly by this invention and therefore eliminating a separate and/or repeated process of fitting more than one material individually, and (d) patient compliance may be improved because continued, even long term, comfortable use of the product is possible without loss of support from the carrier material. Furthermore, the carrier of the present invention provides the added benefit of a bandage that supplies even pressure to the body across the area of the bandage being treated.

[0008] The manufacturing process of this invention lends itself to large-scale production in either flat sheets or long rolls. Final shapes

of limitless configurations can then easily be cut from the sheets or rolls. This provides for rapid and cost effective production of custom-made shapes for any given application or patient.

DETAILED DESCRIPTION OF THE INVENTION

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[0017] The description provided below references FIGS. 1 through 8 as part of the disclosure and the associated reference numerals.

[0018] The device of the present invention, shown in FIGS. 1 through 3, 7 and 8, is generally described as a rigid yet stretchable bandage with a silicone gel coating 5 on one side. The carrier 10 is a thick, stretchable loop portion of a hook-and-loop fastener such as Velcro(R). In a particular embodiment, carrier 10 is about 1/8 inch thick. The silicone gel used in gel 5 is commercially available as either a 1:1, 3:1, or 10:1 mixture of a polydiorganosiloxane resin and a catalyst. Generally speaking, the silicone gel is an addition cured polydimethyl-siloxane gel. This type of gel is well described in the literature, including some of the existing patent literature (e.g. U.S. Pat. No. 4,991,574 ("Pockneil") which is incorporated herein by reference). There is no particular reason to limit our device to silicone gel, if there are other gels that provide clinical benefit. Further, additives may be introduced into the gel,

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including, for example, oils, Ben-Gay(TM), and other topical medications and emollients that seep into the skin area on which the gel is applied. Although other gels may be used, silicone gel has the special benefit of reducing the appearance of hypertrophic and keloid scarring. The advantages of silicone gel are widely known and are also well described in the existing patent literature (e.g. U.S. Pat. No. 5,759,560 ("dilon"), U.S. Pat. No. 5,656,279 ("Dillon"), and U.S. Pat. No. 5,895,656 ("Hirschowitz et al.") all the contents of which are herein incorporated by reference. Silicone gel is also known to be hydrophobic, so it won't break down or change characteristics in the presence of water or sweat. Cured silicone gel is cohesive (retains its shape) but is not very strong. It can be easily torn, and to be handled by the average person, it must be reinforced with some alternate carrier material.

[0019] In the present invention, carrier 10 is preferably a commercially available loop portion of a stretchable hook-and-loop

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fastener such as, for example Velstretch(R). This "stretch" carrier is essentially the traditional loop portion of a hook-and-loop fastener woven with an elastic material. Depending on the degree of "stretch" needed, different elastic interweaves may be used, and from which a stretch of approximately 50% in one direction may be

obtained. This carrier, or substrate, provides the backbone, or compressive force, necessary to apply the silicone gel to any contour on the body, especially joints, both large and small, while also providing the benefit of support to the underlying tissue. The thickness of the carrier also provides support to the joint, so that the pain and discomfort of joint inflammation due to a variety of medical conditions is minimized. An added benefit of the carrier is to provide protection, for example, from abrasion, to the surface of the skin upon which the invention is applied. The support and protective aspects of the present invention, as described above, easily lend themselves to uses on animals as well.

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[0020] In a particularly preferred embodiment, the "fuzzy" side or "loop" side 15 of the carrier 10 is used as the carrier for the gel. The bandage may be secured about the afflicted joint or area of the body with a complimentary strip of the hook portion 20 (FIG. 4) of a hook and loop fastener material which may be used to keep the bandage closed around the joint or area of the body. Multiple strips or one large strip of width equal to approximately the width of the bandage may also be used to provide proper securing of the bandage as shown in FIG. 7.

[0021] In one particularly preferred embodiment, the combined product of this invention has the "loop" side, or loop portion 15 (the soft side), of the stretch carrier 10 on one side and a layer of silicone gel on the other. The gel goes against the skin, and the product is fixed in place by wrapping the body portion with the bandage and applying a complimentary "hook" or closure strip 20 of fastener material at any point along the bandage seam.

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[0022] An embodiment of this invention could be provided in a roll form, about 3" wide by about 1 foot long for applications such as those currently employing use of an Ace(R) type bandage. In this configuration, the present invention can replace the application of Ace-type bandages for musculo-skeletal support and other orthopedic bandages which are specially configured to fit knees, ankles, wrists, elbows, and other problematic joints. Other dimensions applicable to specific applications are also contemplated, such as for use around a thigh or forearm.

[0023] It is an embodiment of the present invention for the stretchable carrier 10 to provide a platform for the gel to be continuously applied against any existing scar, which will in turn provide the widely understood benefit of reduced scar appearance. Because the gel is deposited on the carrier 10 while the carrier 10 is in the un-stretched position, it should be understood that, as the carrier 10 is expanded, the gel also expands in the same direction. This will allow air to circulate into the treated area, reducing discomfort due to

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sweating, yet still provide the benefit of the gel applied against the scar. Further, as the carrier 10 is expanded and then closed using the hook section, the carrier 10 provides compression and support to the affected area.

[0024] The silicone gel provides an additional comfort factor of "coolness" against the skin, which is not diminished to any large degree by keeping the present invention in place for the required period. Because the present invention is comfortable, supportive, adaptable, stretchable, trimmable, usable on any joint or area of the body around which it can be wrapped, it is expected to result in higher patient compliance with the treatment.

[0025] A method of manufacturing the present invention is shown in FIG. 5, and described as follows.

[0026] The desired gel is mixed as designated by the material

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manufacturer, i.e. 1:1, 3:1, or 10:1 parts resin and catalyst, although the mixture can be varied to obtain different degrees of tack from the final cured gel. The mixture is poured onto a flat surface, such as large sheet of polycarbonate, and allowed to settle until it is a consistent thickness. The gel, after having been allowed to settle, has a consistent thickness and is surrounded by an appropriate sized wall to contain the gel on the polycarbonate surface. In one embodiment, the gel thickness is approximately 2 mm, although the thickness may vary from as little as 0.5 mm up to 4 mm. Meanwhile, the carrier 10 may be washed in a mild soapy solution such as Ivory(R) soap to remove the oils and agents used in processing the fabric, and allowed to air dry. After the gel is settled to a consistent thickness (about 20-60 minutes) the dry carrier 10 is placed on top with the loop surface of the carrier 10 away from the gel. The assembled materials are then allowed to cure. In a preferred embodiment, the combined gel and carrier 10 are placed in an oven 50 for 1-3 hours and at a temperature of about 100 to 180 degrees centigrade until the gel is

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cured. The cured, assembled materials are then removed from the oven 50 and can then be cut into any shape desired.

[0027] The present invention also lends itself well to mass production by coextrusion as shown in FIG. 5. In this embodiment, stretchable carrier 10 is continuously unrolled from a large roll of material onto a bath 30 of gel. As the carrier 10 is removed from the bath 30 a layer of gel 40 adheres to the carrier 10 and settles to a uniform thickness. The stream of combined carrier/gel is then passed through a heating oven 50 and cured. At the other end of the oven 50 are take-up rolls and/or cutting fixtures to facilitate rolling or cutting the cured product into any desired configuration.

[0028] In another embodiment shown in FIG. 6, an amount of gel 40 is deposited onto a river of carrier 10 as the carrier 10 passes beneath the gel. A layer of gel is formed on the side of the

carrier 10 opposite the loops and the gel is allowed to settle to a

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uniform thickness. The river of combined carrier/gel material is then passed through a heating oven 50 and cured. At the other end of the oven 50 are take-up rolls and/or cutting fixtures to facilitate rolling or cutting the cured product into any desired configuration.

[0029] Using either of the previous embodiments, there are specific production techniques which will result in a consistent layer of gel being applied to the flat side of the stretch carrier 10, opposite the loop side.

Description of the Drawings:

BRIEF DESCRIPTION OF THE DRAWINGS

[0009] FIG. 1 is a perspective view illustrating the use of one embodiment of this invention on the knee of a user.

[0010] FIG. 2 is an embodiment illustrating gel layer 5 bonded to carrier 10 having loop surface 15.

[0011] FIG. 3 illustrates carrier 10, having a loop surface 15,

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bonded to gel layer 5.
[0012] FIG. 4 illustrates closure strip 20
[0013] FIG. 5 illustrates a method of manufacture using gel bath 30,
carrier 10, and heating element 50.
[0014] FIG. 6 illustrates a river of carrier 10, uncured gel
compound 40, and heating element 50.
[0015] FIG. 7 is a perspective view illustrating the use of particular
embodiments of this invention adjacent to the knee joint of a user.
[0016] FIG. 8 is a perspective view illustrating the use of an embodiment
of the present invention about the thigh of a user, and showing loop
surface 15 of the bandage and closure strips 20.

Exemplary or Independent Claim(s):

1. A bandage comprising:

a first layer of a silicone gel, said first layer having a skin
contacting surface and an adhesion surface opposite said skin
contacting surface; and

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a second layer of an elastic and supportive carrier, said
second layer having an outer surface and an adhesion surface bonded
to said adhesion surface of said first layer to form a continuous
two-ply composite;
wherein said carrier is the stretchable loop portion of a hook
and loop fastener, said loop portion having a loop surface and an
opposite adhesion surface.

Non-exemplary or Dependent Claim(s):

2. The bandage of claim 1, further comprising a closure strip for removably securing the bandage around a part of a body, said closure strip having the hook portion of a hook and loop fastener.

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6205203
Derwent Accession: 2002-425812
UTILITY
Transparent concentrated hair conditioning composition
Inventor: Snyder, Michael Albert, Mason, OH, US
Komure, Natsumi, Ashiya, JP
Assignee: The Procter & Gamble Company, (02), Cincinnati, OH, US
Examiner: Boyer, Charles
Legal Representative: Sivik, Linda M.; Rosnell, Tara M.

	Publication Number	Kind	Date	Application Number	Filing Date
Main Patent	US 6927196	B2	20050809	US 2003387885	20030313
Related Publ	US 20030216267	A1	20031120		
Continuation	PENDING			WO 2001US28475	20010913

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US Term Extension: 26 days
US Classification on document (Main): 510124000
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Examiner Field of Search (US): 510119; 510122; 510123; 510466; 510504;
510124
International Classification (Edition 7): C11D-001/62
Secondary: C11D-009/36

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Patent Number	Kind	Date YYYYMM	Main Class	Main IPC
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Fulltext Word Count: 11337
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Exemplary or Independent Claim Number(s): 1
Number of Drawing Sheets: 0
Number of Figures: 0
Number of US cited patent references: 11
Number of non-US cited patent references: 4

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References to Related Applications:

CROSS REFERENCE TO RELATED APPLICATION

[0001] The application is a continuation of International application PCT/US01/28475 (Case AA567F) filed on Sep. 13, 2001, which claims priority to International application PCT/US00/24973 (Case M495F) filed on Sep. 13, 2000.

Abstract:

[00000] Disclosed is a transparent concentrated hair conditioning composition comprising:
[00000] (1) from about 0.01% to about 50% by weight of a conditioning agent selected from the group consisting of cationic surfactants, cationic polymers, silicone compounds, polyalkylene glycols, and mixtures thereof; and
[00000] (2) an aqueous carrier;
[00000] (3) wherein the hair conditioning composition is used for

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conditioning the hair comprising the steps of;
[00000] (a) applying a shampoo composition comprising a deterotive surfactant to the hair;
[00000] (b) providing a treated water by dispersing the conditioning composition to water, wherein the treated water has a concentration by weight of from 0.001% to 2% of the conditioning agent; and
[00000] (c) rinsing the hair with the treated water;
[00000] and wherein steps (a) and (b) may be reversed;
[00000] (4) wherein the conditioning composition has a turbidity of no more than about 200 NTU, and the treated water has a turbidity of no more than about 100 NTU.

Summary of the Invention:

FIELD OF THE INVENTION

[0002] The present invention relates to concentrated hair conditioning compositions which are transparent, and which deliver hair conditioning benefit to the hair by dispersing the composition to the rinse water and

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rinsing the shampooed hair with such treated rinse water.

BACKGROUND

[0003] Human hair becomes soiled due to its contact with the surrounding environment and from the sebum secreted by the scalp. The soiling of hair causes it to have a dirty feel and an unattractive appearance. The soiling of the hair necessitates shampooing with frequent regularity.

[0004] Shampooing cleans the hair by removing excess soil and sebum. However, shampooing can leave the hair in a wet, tangled, and generally unmanageable state. Once the hair dries, it is often left in a dry, rough, lusterless, or frizzy condition due to removal of the hairs' natural oils and other natural hair conditioning and moisturizing components. The hair can further be left with increased levels of static upon drying, which can interfere with combing and result in a condition commonly referred to as "fly-away hair", or contribute to an undesirable

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phenomena of "split ends", particularly for long hair.

[0005] A variety of approaches have been developed to alleviate these after-shampoo problems. These approaches range from post-shampoo application of hair conditioners such as leave-on and rinse-off products, to hair conditioning shampoos which attempt to both clean and condition the hair from a single product.

[0006] Although some consumers prefer the ease and convenience of a shampoo which includes conditioners, a substantial proportion of consumers prefer the more conventional conditioner formulations which are applied to the hair as a separate step from shampooing, usually subsequent to shampooing. The conditioning formulations thus applied to the hair would then typically be rinsed off from the hair, and the hair would be left to dry.

[0007] In order to meet the needs of consumers living in locations

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where water supply is unstable and thereby desiring conditioning benefit to the hair without using water excess to the amount that would be used for shampooing the hair, a concentrated hair conditioning composition and its method of use was proposed in co-pending PCT application PCT/US00/24973. Such concentrated hair conditioning composition is used by (a) applying a shampoo composition comprising a detergents surfactant to the hair; (b) providing a treated water made by dispersing the concentrated hair conditioning composition to water in, for example, a basin and/or scoop; and (c) rinsing the hair with the treated water; wherein steps (a) and (b) may be reversed. In view of such method of use, good dispersing properties upon contact with water is desired for concentrated hair conditioning compositions. Further, in that consumers tend to associate good dispersing properties by the transparent appearance of the obtained treated water, a concentrated hair conditioning composition having a transparent appearance by itself and are capable of providing transparent treated water is desired. Still further, consumers do not wish to compromise on conditioning performance

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for such transparent appearance.

[0008] Based on the foregoing, there remains a desire to provide concentrated hair conditioning compositions which have a transparent appearance by itself and are capable of providing transparent treated water. There is also a desire to provide such conditioning compositions which disperse easily upon contact with water, yet provide hair conditioning benefits such as smooth feel when the hair is wet, combing ease when the hair is wet or dry, and softness when the hair is dry.

[0009] None of the existing art provides all of the advantages and benefits of the present invention.

SUMMARY

[0010] The present invention is directed to a transparent concentrated hair conditioning composition comprising:

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[0011] (1) from about 0.01% to about 50% by weight of a conditioning agent selected from the group consisting of cationic surfactants, cationic polymers, silicone compounds, polyalkylene glycols, and mixtures thereof; and

[0012] (2) an aqueous carrier;

[0013] (3) wherein the hair conditioning composition is used for conditioning the hair comprising the steps of;

[0014] (a) applying a shampoo composition comprising a detergentsurfactant to the hair;

[0015] (b) providing a treated water by dispersing the conditioningcomposition to water, wherein the treated water has a concentration byweight of from 0.001% to 2% of the conditioning agent; and

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[0016] (c) rinsing the hair with the treated water;

[0017] and wherein steps (a) and (b) may be reversed;

[0018] (4) wherein the conditioning composition has a turbidity of no more than about 200 NTU, and the treated water has a turbidity of no more than about 100 NTU.

[0019] These and other features, aspects, and advantages of the present invention will become evident to those skilled in the art from a reading of the present disclosure.

Definitions

[0020] Herein, "comprising" means that other steps and other ingredients which do not affect the end result can be added. This term encompasses the terms "consisting of" and "consisting essentially of".

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[0021] All percentages, parts and ratios are based upon the total weight of the compositions of the present invention, unless otherwise specified. All such weights as they pertain to listed ingredients are based on the active level and, therefore, do not include carriers or by-products that may be included in commercially available materials.

[0022] Herein, "treated water" means the water to which the conditioning agent of the concentrated hair conditioning composition of the present invention is dispersed, the treated water having a concentration of 0.001% to 2% of the conditioning agent.

[0023] Herein, "dispersible" with regard to the conditioning composition, silicone conditioning agent, or additional conditioning agent, means being capable of providing homogenous treated water when released in water and mixed by hand for no more than 30 seconds, and "dispersability" means such ability.

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[0024] Herein, "transparent" with regard to the conditioning composition, prior to dispersing in water, means having a turbidity of no more than about 200 NTU (Nephelometric Turbidity Units). Herein, "transparent" with regard to the treated water means being homogeneous, and having a turbidity of no more than about 100 NTU. The NTU values are measured using the Hach 2100N Laboratory Turbidimeter calibrated with

Formazin standards, available from Hach Company. Herein, "deposition" means the weight ratio (ppm) of a silicone conditioning agent deposited on a hair sample calculated according to the following: Measurement is made by immersing a measured weight of hair in a treated water containing a measured concentration of the silicone conditioning agent, wherein such concentration is controlled to be between 0.001% to 2%; and analyzing such treated hair for silicon content as a surrogate for the silicone conditioning agent via Inductively Coupled Plasma-Atomic Emission Spectroscopy (ICP-AES); The ICP-AES analysis is conducted using the SPS4000 system available from Seiko Corporation. A response factor obtained by measuring the standard silicone conditioning agent solution

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is introduced.

DETAILED DESCRIPTION

[0025] While the specification concludes with claims which particularly point out and distinctly claim the invention, it is believed the present invention will be better understood from the following description.

[0026] All cited references are incorporated herein by reference in their entirieties. Citation of any reference is not an admission regarding any determination as to its availability as prior art to the claimed invention.

[0000] Method of Conditioning and Product Form

[0027] The present invention is directed to a concentrated hair conditioning composition which is used by a method comprising the steps of:

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[0028] (a) applying a shampoo composition comprising a detergentsurfactant to the hair;

[0029] (b) providing a treated water made by dispersing the conditioning composition to water, wherein the treated water has a concentration by weight of from 0.001% to 2% of the conditioning agent of the conditioning composition; and

[0030] (c) rinsing the hair with the treated water.

[0031] Steps (a) and (b) may be reversed. In the method of the present invention, the hair conditioning composition is dispersed in water, and the treated water thus obtained is applied to the hair. The term "treated water" is defined under the Definitions Section above. This term as used herein describes water provided by the user and to which at least the conditioning composition is dispersed, and in addition, optionally other components such as rinse aid systems are dispersed in the same water.

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Such treated water is applied to the hair after a shampoo composition comprising a detergentsurfactant is applied and worked through the hair. Thus, rinsing the hair with treated water provides two functions at the same time, namely, it washes away the shampoo composition and soils from the hair while also providing conditioning benefit to the hair. This allows the user to provide conditioning benefits to the hair without using water excess to the amount that would be used for shampooing the hair. The treated water can be made in a basin and/or scoop, or any other convenient vessel, typically a basin and/or scoop available in the user's home. When more than one basins or scoops of water are used to rinse the hair, the conditioning composition can be added to any or all basins or scoops to be used for rinsing the hair. Preferably, the treated water is prepared for the basin or scoop to be used last.

[0032] The shampoo composition to be used in step (a) can be any composition comprising detergentsurfactants and is suitable for washing off soils from the hair. The term detergentsurfactant, as used herein,

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is intended to distinguish these surfactants from surfactants which are primarily emulsifying surfactants, i.e. surfactants which provide an emulsifying benefit and which have low cleansing performance. It is recognized that most surfactants have both detergents and emulsifying properties. It is not intended to exclude emulsifying surfactants from the present invention, provided the surfactant also possesses sufficient detergents properties to be useful herein. Detergentsurfactants are typically selected from the group consisting of anionic surfactants, amphoteric surfactants, nonionic surfactants, and mixtures thereof. In one preferred embodiment, at least an anionic surfactant is included in the shampoo composition to be used in step (a), and a cationic conditioning agent is included in the conditioning composition to be used in step (c).

[0033] The present invention is also directed to a method of purifying water for applying to the hair; such method comprising the step of adding a rinse aid system to the water. The term "purified water" as used herein

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described water provided by the user and to which the rinse aid system is dispersed in the water. It has been surprisingly found that, when the pre-purified water contains a high amount of heavy metal ions and salts, the purified water obtained by the method herein can provide benefit to the hair when applied, such as soft feel to the hair, even without conditioning agents, as compared to the pre-purified water. The rinse aid system for purifying water is preferably included in the concentrated hair conditioning composition.

[0034] For providing a conditioning benefit to the hair while not negatively affecting the rinsing ability of the shampoo composition and soils from the hair, the treated water has a concentration by weight of from 0.001% to 2%, preferably from about 0.005% to about 0.5% of conditioning agent. In order for the user to achieve this suitable concentration of treated water, the conditioning composition of the

present invention may be provided in a package means containing a unit dose of the conditioning composition, or with a measuring means. The

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dosage of the composition is determined based on the amount of water contained in an average size vessel provided by the user, for example a basin and/or scoop, for making the treated water.

[0035] The conditioning composition of the present invention can be provided in any form which is suitable for transportation and storage at ambient temperatures, and is readily applicable to the water upon use to make the treated water. As the conditioning composition is designed to readily disperse in water, the composition is typically easily degraded by humidity. Packaging for any product form is selected to avoid humidity and preferably, accidental contact with water.

[0036] The conditioning composition of the present invention is in the form of a liquid such as a gel or paste, the carrier being aqueous. Suitable packaging for such product form include sachets, or constructed packaging having one or more compartments.

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[0000] Conditioning Agent

[0037] The conditioning agents useful in the present invention are those which are dispersible in water, provide a transparent concentrated hair conditioning composition, and provide a transparent treated water. The terms "dispersible" and "transparent" are defined in the Definitions Section above. Suitable conditioning agents are selected from the group consisting of cationic surfactants, cationic polymers, silicone compounds, polyalkylene glycols and mixtures thereof, preferably mono long-chain ammonium compounds, hydrophilically substituted cationic surfactants, cationic polymers, hydrophilically substituted silicone compounds, polyalkylene glycols, and mixtures thereof. The type of conditioning agents are selected depending on the desired characteristics of the product. Highly water soluble conditioning agents are typically used. A combination of conditioning agents is preferably used to provide benefits provided by the different conditioning agents. Conditioning agents which are less water soluble can be used in combination with

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highly water soluble conditioning agents.

[0038] The present composition comprises from about 0.01% to about 50%, preferably from about 1% to about 20% of conditioning agents. The level is selected according to the form in which the product is provided and to the desired concentration of the treated water to be made and applied to the hair.

[0039] In one embodiment, the conditioning composition of the present

invention comprises from about 1% to about 10% of a mono long-chain ammonium compound or a hydrophilically substituted cationic surfactant and from about 1% to about 10% of a cationic polymer.

[0000] Cationic Surfactant

[0040] Cationic surfactants are useful as conditioning agents herein. Among the cationic surfactants useful herein are those generally

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described as mono long-chain ammonium compounds, corresponding to the general formula (I):

(Chemical formulae 00001. See patent image)

wherein R¹ is selected from an aliphatic group of from 8 to 30 carbon atoms or an aromatic, alkoxy, polyoxyalkylene, alkylamido, hydroxyalkyl, aryl or alkylaryl group having up to about 22 carbon atoms, R², R³, and R⁴ are independently selected from an aliphatic group of from 1 to about 3 carbon atoms or an aromatic, alkoxy, polyoxyalkylene, alkylamido, hydroxyalkyl, aryl or alkylaryl group having up to about 8 carbon atoms; and X is a salt-forming anion such as those selected from halogen, (e.g. chloride, bromide), acetate, citrate, lactate, glycolate, phosphate, nitrate, sulfonate, sulfate, alkylsulfate, and alkyl sulfonate radicals. The aliphatic groups can contain, in addition to carbon and hydrogen atoms, ether linkages, and other groups such as amino groups. The longer chain aliphatic groups, e.g., those of

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about 12 carbons, or higher, can be saturated or unsaturated. Preferred is when R¹ is selected from C₈ to about C₂₂ alkyl.

[0041] Among the cationic surfactants of general formula (I), preferred are those containing in the molecule at least one alkyl chain having at least 16 carbons. Nonlimiting examples of such preferred cationic surfactants include: cetyl trimethyl ammonium chloride available, for example, with tradename CA-2350 from Nikko Chemicals and CTAC 30KC available from KCI, stearyl trimethyl ammonium chloride with tradename Arquad 18/50 available from Akzo Nobel, hydrogenated tallow alkyl trimethyl ammonium chloride, stearyl dimethyl benzyl ammonium chloride, stearyl propyleneglycol phosphate dimethyl ammonium chloride, stearoyl amidopropyl dimethyl benzyl ammonium chloride, stearoyl amidopropyl dimethyl (myristylacetate) ammonium chloride, and N-(stearoyl colamino formyl methyl) pyridinium chloride.

[0042] Also preferred are hydrophilically substituted cationic

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surfactants in which at least one of the substituents contain one or more aromatic, ether, ester, amido, or amino moieties present as substituents

or as linkages in the radical chain, wherein at least one of the $R^{[sup]1}-R^{[sup]4}$ radicals contain one or more hydrophilic moieties selected from alkoxy (preferably $C^{[sub]1}-C^{[sub]3}$ alkoxy), polyoxyalkylene (preferably $C^{[sub]1}-C^{[sub]3}$ polyoxyalkylene), alkylamido, hydroxalkyl, alkylester, and combinations thereof. Preferably, the hydrophilically substituted cationic conditioning surfactant contains from 2 to about 10 nonionic hydrophile moieties located within the above stated ranges. Preferred hydrophilically substituted cationic surfactants include those of the formula (II) through (VIII) below:

(Chemical formulae 00002. See patent image)

wherein n is from 8 to about 28, $x+y$ is from 2 to about 40, $Z^{[sup]1}$ is a short chain alkyl, preferably a $C^{[sub]1}-C^{[sub]3}$ alkyl, more preferably methyl, or $(CH^{[sub]2}CH^{[sub]2}O)^{[sub]z}H$ wherein $x+y+z$ is up to 60, and X is

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a salt forming anion as defined above;

(Chemical formulae 00003. See patent image)

wherein m is 1 to 5, one or more of $R^{[sup]5}$, $R^{[sup]6}$, and $R^{[sup]7}$ are independently an $C^{[sub]1}-C^{[sub]3}$ alkyl, the remainder are $CH^{[sub]2}CH^{[sub]2}OH$, one or two of $R^{[sup]8}$, $R^{[sup]9}$, and $R^{[sup]10}$ are independently an $C^{[sub]1}-C^{[sub]3}$ alkyl, and remainder are $CH^{[sub]2}CH^{[sub]2}OH$, and X is a salt forming anion as mentioned above;

(Chemical formulae 00004. See patent image)

wherein, independently for formulae (IV) and (V), $Z^{[sup]2}$ is an alkyl, preferably a $C^{[sub]1}-C^{[sub]3}$ alkyl, more preferably methyl, and $Z^{[sup]3}$ is a short chain hydroxalkyl, preferably hydroxymethyl or hydroxyethyl, p and q independently are integers from 2 to 4, inclusive, preferably from 2 to 3, inclusive, more preferably 2, $R^{[sup]11}$ and $R^{[sup]12}$,

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independently, are substituted or unsubstituted hydrocarbyls, preferably $C^{[sub]1}2-C^{[sub]2}0$ alkyl or alkenyl, and X is a salt forming anion as defined above;

(Chemical formulae 00005. See patent image)

wherein $R^{[sup]13}$ is a hydrocarbyl, preferably a $C^{[sub]1}-C^{[sub]3}$ alkyl, more preferably methyl, $Z^{[sup]4}$ and $Z^{[sup]5}$ are, independently, short chain hydrocarbyls, preferably $C^{[sub]1}2-C^{[sub]4}$ alkyl or alkenyl, more preferably ethyl, a is from 2 to about 40, preferably from about 7 to about 30, and X is a salt forming anion as defined above;

(Chemical formulae 00006. See patent image)

wherein $R^{[sup]14}$ and $R^{[sup]15}$, independently, are $C^{[sub]1}-C^{[sub]3}$ alkyl, preferably methyl, $Z^{[sup]6}$ is a $C^{[sub]1}2-C^{[sub]2}2$ hydrocarbyl, alkyl carboxy or alkylamido, and A is a protein, preferably a collagen,

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keratin, milk protein, silk, soy protein, wheat protein, or hydrolyzed
forms thereof; and X is a salt forming anion as defined above;

(Chemical formulae 00007. See patent image)

wherein b is 2 or 3, R^{[sup]16} and R^{[sup]17}, independently are
C<sub>[sub]1-C<sub>[sub]3 hydrocarbys preferably methyl, and X is a salt forming
anion as defined above. Nonlimiting examples of hydrophilically
substituted cationic surfactants useful in the present invention include
the materials having the following CTFA designations: quaternium-16,
quaternium-26, quaternium-27, quaternium-30, quaternium-33,
quaternium-43, quaternium-52, quaternium-53, quaternium-56,
quaternium-60, quaternium-61, quaternium-62, quaternium-70,
quaternium-71, quaternium-72, quaternium-75, quaternium-76 hydrolyzed
collagen, quaternium-77, quaternium-78, quaternium-79 hydrolyzed
collagen, quaternium-79 hydrolyzed keratin, quaternium-79 hydrolyzed milk
protein, quaternium-79 hydrolyzed silk, quaternium-79 hydrolyzed soy</sub></sub>

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protein, and quaternium-79 hydrolyzed wheat protein, quaternium-80,
quaternium-81, quaternium-82, quaternium-83, quaternium-84, and mixtures
thereof.

[0043] Highly preferred hydrophilically substituted cationic
surfactants include dialkylamido ethyl hydroxyethylmonium salt,
dialkylamidoethyl dimonium salt, dialkyloyl ethyl hydroxyethylmonium
salt, dialkyloyl ethyldimmonium salt, alkyl amidopropyl trimonium salt,
polyoxyethylene alkyl ammonium salt, and mixtures thereof; for example,
commercially available under the following tradenames; VARISOFT 110,
VARISOFT PATC, VARIQUAT K1215 and 638 from Witco Chemical, ETHOQUAD
18/25, ETHOQUAD O/12PG, ETHOQUAD C/25, and ETHOQUAD S/25 from Akzo,
DEHYQUART SP from Henkel, and MONAQUAT ISEIS, and MONAQUAT SL-5 available
from Uniqema.

[0000] Cationic Polymer

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[0044] Cationic polymers are useful as conditioning agents herein. As
used herein, the term "polymer" shall include materials whether made by
polymerization of one type of monomer or made by two (i.e., copolymers)
or more types of monomers.

[0045] The cationic polymers hereof will generally have a weight
average molecular weight which is at least about 5,000, typically at
least about 10,000, and is less than about 10 million. Preferably, the
molecular weight is from about 100,000 to about 2 million. The cationic
polymers will generally have cationic nitrogen-containing moieties such
as quaternary ammonium or cationic amino moieties, and mixtures thereof.

[0046] Any anionic counterions can be utilized for the cationic polymers so long as the water solubility criteria is met. Suitable counterions include halides (e.g., Cl, Br, I, or F, preferably Cl, Br, or I), sulfate, and methylsulfate. Others can also be used, as this list is not exclusive.

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[0047] The cationic nitrogen-containing moiety will be present generally as a substituent, on a fraction of the total monomer units of the cationic polymers. Thus, the cationic polymer can comprise copolymers, terpolymers, etc. of quaternary ammonium or cationic amine-substituted monomer units and other non-cationic units referred to herein as spacer monomer units. Such polymers are known in the art, and a variety can be found in the CTFA Cosmetic Ingredient Dictionary, 3rd edition, edited by Estrin, Crosley, and Haynes, (The Cosmetic, Toiletry, and Fragrance Association, Inc., Washington, D.C., 1982).

[0048] Suitable cationic polymers include, for example, copolymers of vinyl monomers having cationic amine or quaternary ammonium functionalities with water soluble spacer monomers such as acrylamide, methacrylamide, alkyl and dialkyl acrylamides, alkyl and dialkyl methacrylamides, alkyl acrylate, alkyl methacrylate, vinyl caprolactone, and vinyl pyrrolidone. The alkyl and dialkyl substituted monomers preferably have C₁-C₇ alkyl groups, more preferably

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C₁-C₇ alkyl groups. Other suitable spacer monomers include vinyl esters, vinyl alcohol (made by hydrolysis of polyvinyl acetate), maleic anhydride, propylene glycol, and ethylene glycol.

[0049] The cationic amines can be primary, secondary, or tertiary amines, depending upon the particular species and the pH of the composition. In general, secondary and tertiary amines, especially tertiary amines, are preferred.

[0050] Amine-substituted vinyl monomers can be polymerized in the amine form, and then optionally can be converted to ammonium by a quaternization reaction. Amines can also be similarly quaternized subsequent to formation of the polymer. For example, tertiary amine functionalities can be quaternized by reaction with a salt of the formula R'X wherein R' is a short chain alkyl, preferably a C₁-C₇ alkyl, more preferably a C₁-C₃ alkyl, and X is an anion which forms a water soluble salt with the quaternized ammonium.

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[0051] Suitable cationic amino and quaternary ammonium monomers include, for example, vinyl compounds substituted with dialkylaminoalkyl acrylate, dialkylaminoalkyl methacrylate, monoalkylaminoalkyl acrylate, monoalkylaminoalkyl methacrylate, trialkyl methacryloxyalkyl ammonium salt, trialkyl acryloxyalkyl ammonium salt, diallyl quaternary ammonium

salts, and vinyl quaternary ammonium monomers having cyclic cationic nitrogen-containing rings such as pyridinium, imidazolium, and quaternized pyrrolidone, e.g., alkyl vinyl imidazolium, alkyl vinyl pyridinium, alkyl vinyl pyrrolidone salts. The alkyl portions of these monomers are preferably lower alkyls such as the C₁-C₃ alkyls, more preferably C₁ and C₂ alkyls. Suitable amine-substituted vinyl monomers for use herein include dialkylaminoalkyl acrylate, dialkylaminoalkyl methacrylate, dialkylaminoalkyl acrylamide, and dialkylaminoalkyl methacrylamide, wherein the alkyl groups are preferably C₁-C₇ hydrocarbyls, more preferably C₁-C₃, alkyls.

[0052] The cationic polymers hereof can comprise mixtures of monomer

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units derived from amine- and/or quaternary ammonium-substituted monomer and/or compatible spacer monomers.

[0053] Suitable cationic hair conditioning polymers include, for example: copolymers of 1-vinyl-2-pyrrolidone and 1-vinyl-3-methylimidazolium salt (e.g., chloride salt) (referred to in the industry by the Cosmetic, Toiletry, and Fragrance Association, "CTFA", as Polyquaternium-16), such as those commercially available from BASF Wyandotte Corp. (Parsippany, N.J., USA) under the LUVIQUAT tradename (e.g., LUVIQUAT FC 370); copolymers of 1-vinyl-2-pyrrolidone and dimethylaminoethyl methacrylate (referred to in the industry by CTFA as Polyquaternium-11) such as those commercially available from Gaf Corporation (Wayne, N.J., USA) under the GAFQUAT tradename (e.g., GAFQUAT 755N); cationic diallyl quaternary ammonium-containing polymers, including, for example, dimethyldiallylammonium chloride homopolymer and copolymers of acrylamide and dimethyldiallylammonium chloride, referred to in the industry (CTFA) as Polyquaternium 6 and Polyquaternium 7 such

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as those with tradenames Salcare SC10 and Salcare SC11 available from Ciba Specialty Chemicals, and those commercially available from Calgon with tradename Merquat 2200, respectively; and mineral acid salts of amino-alkyl esters of homo- and co-polymers of unsaturated carboxylic acids having from 3 to 5 carbon atoms, as described in U.S. Pat. No. 4,009,256, incorporated herein by reference.

[0054] Other cationic polymers that can be used include polysaccharide polymers, such as cationic cellulose derivatives and cationic starch derivatives.

[0055] Cationic polysaccharide polymer materials suitable for use herein include those of the formula:

(Chemical formulae 00008. See patent image)

wherein: A is an anhydroglucose residual group, such as a starch or

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cellulose anhydroglucose residual, R is an alkylene oxyalkylene, polyoxyalkylene, or hydroxyalkylene group, or combination thereof, R¹, R², and R³ independently are alkyl, aryl, alkylaryl, arylalkyl, alkoxyalkyl, or alkoxyaryl groups, each group containing up to about 18 carbon atoms, and the total number of carbon atoms for each cationic moiety (i.e., the sum of carbon atoms in R¹, R² and R³) preferably being about 20 or less, and X is an anionic counterion, as previously described.

[0056] Highly preferred cationic cellulose polymers are available from Amerchol Corp. (Edison, N.J., USA) in their Polymer JR(R) and LR(R) series of polymers, as salts of hydroxyethyl cellulose reacted with trimethyl ammonium substituted epoxide, referred to in the industry (CTFA) as Polyquaternium 10. Another type of cationic cellulose includes the polymeric quaternary ammonium salts of hydroxyethyl cellulose reacted with lauryl dimethyl ammonium-substituted epoxide, referred to in the industry (CTFA) as Polyquaternium 24. These materials are available from

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Amerchol Corp. (Edison, N.J., USA) under the tradename Quaterisoft Polymer LM-(R).

[0057] Other cationic polymers that can be used include cationic guar gum derivatives, such as guar hydroxypropyltrimonium chloride (commercially available from Celanese Corp. in their Jaguar R series). Other materials include quaternary nitrogen-containing cellulose ethers (e.g., as described in U.S. Pat. No. 3,962,418, incorporated herein by reference), and copolymers of etherified cellulose and starch (e.g., as described in U.S. Pat. No. 3,958,581, incorporated herein by reference.)

[0058] Other cationic polymers useful herein are:

[0059] (1) Cationic polymers chosen from the group comprising:

[0060] i) polymers containing units of the formula:
-A-Z¹-A-Z²(I)

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wherein A denotes a radical containing two amino groups, preferably a piperazinyl radical, and Z¹ and Z² independently denote a divalent radical which is a straight-chain or branched-chain alkylene radical which contains up to about 7 carbon atoms in the main chain, is unsubstituted or substituted by one or more hydroxyl groups and can also contain one or more oxygen, nitrogen and sulphur atoms and 1 to 3 aromatic and/or heterocyclic rings, the oxygen, nitrogen and sulphur atoms generally being present in the form of an ether or thioether, sulphoxide, sulphone, sulphonium, amine, alkylamine, alkenylamine, benzylamine, amine oxide, quaternary ammonium, amide, imide, alcohol, ester and/or urethane group;

[0061] ii) polymers containing units of the formula:
-A-Z'-A-Z'(II)

wherein A denotes a radical containing two amino groups, preferably a piperazinyl radical, and Z' denotes the symbol Z³ and Z⁴ while denoting the symbol Z⁴ at least once; Z³ denotes a divalent

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radical which is a straight-chain or branched-chain alkylene or hydroxyalkylene radical having up to about 7 carbon atoms in the main chain, and Z⁴ is a divalent radical which is a straight-chain or branched-chain alkylene radical which has up to about 7 carbon atoms in the main chain, is unsubstituted and substituted by one or more hydroxyl radicals and is interrupted by one or more nitrogen atoms, the nitrogen atom being substituted by an alkyl chain having from 1 to 4 carbon atoms, preferably 4 carbon atoms, which is optionally interrupted by an oxygen atom and optionally contains one or more hydroxyl groups; and

[0062] iii) the alkylation products, with alkyl and benzyl halides of 1 to 6 carbon atoms, alkyl tosylates or mesylates, and the oxidation products, of the polymers of the formulae (I) and (II) indicated above under i) and ii).

[0063] (2) Polyamino-polyamides prepared by the polycondensation of an acid compound with a polyamine. The acid compound can be organic

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dicarboxylic acids, aliphatic monocarboxylic and dicarboxylic acids containing a double bond, esters of the abovementioned acids, preferably the esters with lower alkanols having from 1 to 6 carbon atoms, and mixtures thereof. The polyamine is a bis-primary or mono- or bis-secondary polyalkylene-polyamine wherein up to 40 mol % of this polyamine can be a bis-primary amine, preferably ethylenediamine, or a bis-secondary amine, preferably piperazine, and up to 20 mol % can be hexamethylenediamine.

[0064] (3) The above mentioned polyamino-polyamides can be alkylated and/or crosslinked. The alkylation can be carried out with glycidol, ethylene oxide, propylene oxide or acrylamide. The crosslinking is carried out by means of a crosslinking agent such as:

[0065] i) epihalogenohydrins, diepoxides, dianhydrides, unsaturated anhydrides and bis-saturated derivatives, in proportions of 0.025 to 0.35 mol of crosslinking agent per amine group of the polyamino-polyamide;

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[0066] iii) bis-halogenohydrins, bis-azetidinium compounds, bishalogeno acyldiamines and bis-(alkyl halides);

[0067] iii) oligomers obtained by reacting a compound chosen from the group comprising bis-halogenohydrins, bis-azetidinium compounds, bis-halogenoacetyl-diamines, bis-(alkyl halides), epihalogenohydrins, diepoxides and bis-unsaturated derivatives, with another compound which

is a difunctional compound which is reactive towards the compound; and

[0068] iv) the quaternisation product of a compound chosen from the compounds i) and the oligomers iii) and containing one or more tertiary amine groups which can be totally or partially alkylated with an alkylating agent preferably chosen from methyl or ethyl chlorides, bromides, iodides, sulphates, mesylates and tosylates, benzyl chloride or bromide, ethylene oxide, propylene oxide and glycidol, the crosslinking being carried out by means of 0.025 to 0.35 mol, in particular of 0.025 to 0.2 mol and more particularly of 0.025 to 0.1 mol, of crosslinking

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agent per amine group of the polyamino-polyamide.

[0069] (4) Polyamino-polyamide derivatives resulting from the condensation of a polyalkylene-polyamine with a polycarboxylic acid, followed by alkylation by means of difunctional agents, such as the adipic acid/dialkylaminohydroxyalkyl-dialkylenetriamine copolymers in which the alkyl radical contains 1 to 4 carbon atoms and preferably denotes methyl, ethyl or propyl.

[0070] Useful polymers are adipic acid/dimethylaminohydroxypropyl-diethylenetriamine copolymers sold under the name Cartaretine F, F^{sup}4 or F^{sup}8 by SANDOZ.

[0071] (5) Polymers obtained by reacting polyalkylenepolyamine containing two primary amine groups and at least one secondary amine group, with a dicarboxylic acid chosen from diglycolic acid and saturated aliphatic dicarboxylic acids having 3 to 8 carbon atoms, the molar ratio

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of the polyalkylene-polyamine to the dicarboxylic acid being from 0.8:1 to 1.4:1, and the resulting polyamide being reacted with epichlorohydrin in a molar ratio of epichlorohydrin to the secondary amine groups of the polyamide of from 0.5:1 to 1.8:1.

[0072] Useful polymers are those sold under the name HERCOSETT 57 by Hercules Incorporated, and that sold under the name PD 170 or DELSETTE 101 by Hercules.

[0073] (6) Cyclic polymers generally having a molecular weight of 20,000 to 3,000,000 such as homopolymers containing, as the main constituent of the chain, units corresponding to the formula (III) or (III')

(Chemical formulae 00009. See patent image)

in which p and t are 0 or 1, and p+t=1, R'' denotes hydrogen or

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methyl, R and R' independently of one another denote an alkyl group having from 1 to 22 carbon-atoms, a hydroxylalkyl group in which the alkyl group preferably has 1 to 5 carbon atoms, or a lower amidoalkyl group, and R and R' can denote, together with the nitrogen atom to which they are attached, heterocyclic groups such as piperidinyl or morpholinyl, and Y is bromide, chloride, acetate, borate, citrate, tartrate, bisulphite, bisulphite, sulphate or phosphate. Copolymers containing units of the formula III and III' may also contain units derived from acrylamide or from diacetoneacrylamide.

[0074] Amongst the quaternary ammonium polymers of the type defined above, those which are preferred are the dimethyldiallylammonium chloride homopolymer sold under the name MERQUAT 100 and having a molecular weight of less than 100,000, and the dimethyldiallylammonium chloride/acrylamide copolymer having a molecular weight of more than 500,000 and sold under the name MERQUAT 550 by CALGON Corporation.

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[0075] (7) Poly-(quaternary ammonium) compounds of the formula

(Chemical formulae 00010. See patent image)

wherein R^{[sup]1}, R^{[sup]2}, R^{[sup]3}, and R^{[sup]4} are independently aliphatic, alicyclic or arylaliphatic radicals containing a maximum of 20 carbon atoms, or lower hydroxylaliphatic radicals, or alternatively, with the nitrogen atoms to which they are attached, heterocyclic rings optionally containing a second hetero-atom other than nitrogen, or alternatively R^{[sup]1}, R^{[sup]2}, R^{[sup]3}, and R^{[sup]4} represent a group CH_{[sub]2}CHR'^{[sup]3}R'^{[sup]4} wherein R'^{[sup]3} denoting hydrogen or lower alkyl and R'^{[sup]4} denoting SO, CN, CON(R'^{[sup]6})_{[sub]2}, COOR'^{[sup]5}, COR'^{[sup]5}, COOR'^{[sup]7}D, or CONHR'^{[sup]7}D; R'^{[sup]5} denoting lower alkyl, R'^{[sup]6} denoting hydrogen or lower alkyl, R'^{[sup]7} denoting alkylene and D denoting a quaternary ammonium group; A and B independently represent a polymethylene group containing from 2 to 20 carbon atoms, which can be linear or branched, saturated or unsaturated

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and can contain, inserted in the main chain one or more groups -CH_{[sub]2}-Y-CH_{[sub]2}- wherein Y denotes benzene, oxygen, sulfur, SO, SO_{[sub]2}, SS, NR'^{[sup]8}, N^{[sup]9}+(R'^{[sup]9})_{[sub]2}X^{[sup]1}-, CHO_{[sub]2}, NHCONH, CONHR'^{[sup]8}, or COO; X^{[sup]1}- denoting an anion derived from a mineral or organic acid, R'^{[sup]8} denoting hydrogen or lower alkyl and R'^{[sup]9} denoting lower alkyl, or alternatively A and R^{[sup]1} and R^{[sup]3} form a piperazine ring with the two nitrogen atoms to which they are attached. If A denotes a linear or branched, saturated or unsaturated alkylene or hydroxylalkylene radical, B can also denote a group: -(CH_{[sub]2})_{[sub]n}-CO-D-OC-(CH_{[sub]2})_{[sub]n}-; wherein n is selected so that the molecular weight is generally between 1,000 and 100,000; and D denotes:

[0076] i) a glycol radical of the formula -O-Z-O-, in which Z denotes a linear or branched hydrocarbon radical or a group corresponding to the formulae: -(CH_{[sub]2}-2-CH_{[sub]2}-O-)_{[sub]x}-CH_{[sub]2}-2-CH_{[sub]2}- or -(CH_{[sub]2}-2-C(CH_{[sub]2})_{[sub]3}H-O-)_{[sub]y}-CH_{[sub]2}-C(CH_{[sub]2})_{[sub]3}H- wherein x and y

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denote an integer from 1 to 4, representing a definite and unique degree
of polymerisation;

[0077] ii) a bis-secondary diamine radical, such as a piperazine
derivative;

[0078] iii) a bis-primary diamine radical of the formula: -N-H-Y-NH-,
in which Y denotes a linear or branched hydrocarbon radical or the
divalent radical
-CH₂-CH₂-S-S-CH₂-CH₂-; or

[0079] iv) a ureylene group of the formula -N-H-CO-NH-.

[0080] (8) Homopolymers or copolymers derived from acrylic or
methacrylic acid and containing at least one unit:

(Chemical formulae 00011. See patent image)

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wherein R¹ is H or CH₃, A is a linear or branched alkyl
group having 1 to 6 carbon atoms or a hydroxyalkyl group having 1 to 4
carbon atoms, R², R³ and R⁴ independently denote an alkyl
group having 1 to 18 carbon atoms or a benzyl group, R⁵ and R⁶
denote H or alkyl having 1 to 6 carbon atoms and X denotes methosulphate
or halide, such as chloride or bromide.

[0081] The comonomer or comonomers which can be used typically belong
to the family comprising: acrylamide, methacrylamide,
diacetone-acrylamide, acrylamide and methacrylamide substituted on the
nitrogen by one or more lower alkyls, alkyl esters of acrylic and
methacrylic acids, vinylpyrrolidone and vinyl esters.

[0082] (9) Other cationic polymers which can be used are
polyalkyleneimines, in particular polyethyleneimines, polymers containing
vinylpyridine units or vinylpyridinium units in the chain, condensates of
polyamines and of epichlorohydrin, poly-(quaternary ureylenes) and chitin

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derivatives.

[0083] Highly preferred cationic polymers include commercially
available material such as Polyquaternium 4 under the tradenames CELQUAT
H100 and CELQUAT L200 supplied by National Starch & Chemicals,
Polyquaternium 7 with tradenames Salcare SC10 and Salcare SC11 available
from Ciba Specialty Chemicals, and Polyquaternium 11 under the tradename
GAFQUAT 755N supplied by ISP.

[0000] Silicone Compound

[0084] The silicone compounds useful herein include volatile or nonvolatile dispersible silicone compounds having hair conditioning properties. Preferred are hydrophilically substituted silicone compounds. The silicone compounds for use herein will preferably have a viscosity of less than about 5,000 mPa[middle dot]s at 25 degree C., more preferably less than about 1,000 mPa[middle dot]s at 25 degree C.

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[0085] The viscosity can be measured by means of a glass capillary viscometer as set forth in Dow Corning Corporate Test Method CTM004, Jul. 20, 1970. Other nonvolatile silicone compounds having hair conditioning properties can also be used. Without being bound by theory, silicone compounds having lower viscosities are believed to provide faster dispersion when in contact with water.

[0086] Particularly preferred silicone compounds herein are those having substitute groups selected from the group consisting of alkoxy groups, amino groups, quaternary amino groups, and mixtures thereof. Silicone compounds having alkoxy groups such as ethylene oxide groups are preferred as they are easily dispersed in water, and provide good transparency to the treated water. Silicone compounds having amino groups and/or quaternary amino groups are preferred as they have good solubility, and also provide good conditioning performance as being substantive to the hair surface.

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[0087] When silicone compounds having no hydrophilic functionality and/or viscosities of over 5,000 mPa[middle dot]s at 25 degree C. are used, they are kept to a small amount, as they tend to make the treated water turbid, or make the composition less dispersible. It is known that transparent compositions containing silicone compounds of high molecular weight can be made by utilizing available emulsion techniques. However, the emulsion structure of such transparent compositions including silicone compounds of high molecular may be destroyed upon dispersion in an abundant amount of water, i.e., upon making the treated water.

[0088] In one embodiment, the composition of the present invention comprises from about 0.01% to about 20% of a hydrophilically substituted silicone compound having substitute groups selected from the group consisting of alkoxy groups, amino groups, quaternary groups, and mixtures thereof.

[0089] In one embodiment, the composition of the present invention

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comprises a silicone compound that provide a deposition of from about 10 ppm to about 5000 ppm, when applied to the hair as the treated water. The term "deposition" is defined in the Definitions Section above.

[0090] The hydrophilically substituted silicone conditioning agents that can be used include, for example, a polyethylene oxide modified polydimethylsiloxane although mixtures of ethylene oxide and propylene oxide can also be used. The polypropylene oxide level should be sufficiently low so as not to interfere with the dispersability characteristics of the silicone. These materials are also known as dimethicone copolymers. These materials can be directly dispersed in water.

[0091] Other hydrophilically substituted silicone compounds include amino substituted materials. Suitable alkylamino substituted silicone compounds include those represented by the following structure (II)

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(Chemical formulae 00012. See patent image)

wherein R¹²⁴ is H, CH₃ or OH, p¹, p², q¹ and q² are integers which depend on the molecular weight, the weight average molecular weight being approximately between 5,000 and 10,000. This polymer is also known as "amodimethicone". These Amodimethicones are available, for example, from Dow Corning as SM8704C.

[0092] Suitable amino substituted silicone fluids include those represented by the formula (III)
R¹²⁵(sub)1G¹(sub)3-a-Si-(OSiG¹²)(sub)p3-(OSiG¹²)b(R¹²⁵)(sub)2-b¹(sub)p4-O-SiG¹²3-a(R¹²⁵)(sub)a(III)
in which G is chosen from the group consisting of hydrogen, phenyl, OH, C₁sub1-C₁sub8 alkyl and preferably methyl; a denotes 0 or an integer from 1 to 3, and preferably equals 0; b denotes 0 or 1 and preferably equals 1; the sum p¹+p² is a number from 1 to 2,000 and preferably from 50 to 150, p³ being able to denote a number from

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0 to 1,999 and preferably from 49 to 149 and p⁴ being able to denote an integer from 1 to 2,000 and preferably from 1 to 10; R¹²⁵ is a monovalent radical of formula C₁sub1q3H₂q3L in which q³ is an integer from 2 to 8 and L is chosen from the groups

[0000]

[0093] -N(R¹²⁵)CH₂-CH₂-N(R¹²⁶)(sub)2

[0094] -N(R¹²⁶)(sub)2

[0095] -N(R¹²⁶)(sub)3X'

[0096] -N(R¹²⁶)CH₂-CH₂-NR¹²⁶H₂X'
in which R¹²⁶ is chosen from the group consisting of hydrogen, phenyl, benzyl, a saturated hydrocarbon radical, preferably an alkyl radical containing from 1 to 20 carbon atoms, and X' denotes a halide

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ion.

[0097] An especially preferred amino substituted silicone corresponding to formula (III) is the polymer known as "trimethylsilylamodimethicone" wherein R¹²⁸ is CH₃.

[0098] Other amino substituted silicone polymers useful herein include cationic amino substituted silicones represented by the formula (V):

(Chemical formulae 00013. See patent image)

where R¹²⁸ denotes a monovalent hydrocarbon radical having from 1 to 18 carbon atoms, preferably an alkyl or alkenyl radical such as methyl; R¹²⁹ denotes a hydrocarbon radical, preferably a C₁-C₁₈ alkylene radical or a C₁-C₁₈, and more preferably C₁-C₈, alkyleneoxy radical; Q' is a halide ion, preferably chloride; p⁵ denotes an average statistical value from 2

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to 20, preferably from 2 to 8; p⁶ denotes an average statistical value from 20 to 200, and preferably from 20 to 50. A preferred polymer of this class is available from Union Carbide under the name "UCAR SILICONE ALE 56." These materials can be directly dispersed in water.

[0099] Commercially available amino substituted silicone compounds which are useful herein include tradenames BY16-893 and BY16-907 available from Dow Corning, tradename XS69-B5476 available from General Electric, Abilquat series available from Goldschmidt, and Ultrasil series from Noveon (B.F. Goodrich).

[0100] Amino silicone polyether compounds are particularly useful herein as hydrophilically substituted silicone compounds. Amino silicone polyether compounds useful herein are those which comprise a methylpolysiloxane moiety, an amino moiety, and an polyalkoxy moiety; is water dispersible, and preferably water soluble to some extent. Without being bound by theory, it is believed that the polyalkoxy groups such as

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ethylene oxide groups provide good water dispersion characteristic, while the amino groups provide good conditioning characteristic as being substantive to the hair surface. The amino silicone polyether compounds for use herein will preferably have a viscosity of less than about 5000 mPa[middle dot]s at 25 degree C., more preferably less than about 1000 mPa[middle dot]s. The viscosity can be measured by means of a glass capillary viscometer as set forth in Dow Corning Corporate Test Method CTM0004, Jul. 20, 1970. Other nonvolatile silicone compounds having hair conditioning properties can also be used. Without being bound by theory, silicone compounds having lower viscosities are believed to provide faster dispersion when in contact with water.

[0101] Particularly useful amino silicone polyether compounds herein include those represented by the following structure (I):

(Chemical formulae 00014. See patent image)

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wherein none of p, q, x, y, and z are 0, but are integers that give the compound the transparency and dispersibility as described above, preferably the preferred viscosity properties described above, and R is an alkyl of 1 to 3 carbon atoms.

[0102] Commercially available amino silicone polyether compounds that are highly preferred for use herein include those materials with tradenames: BY16-893 and BY16-907 available from Dow Corning, XS69-B5476 available from GE Toshiba Silicone, and the Ultrasil series available from BF Goodrich.

[0000] Polyalkylene Glycols

[0103] The polyalkylene glycols useful herein include those which are soluble or dispersible in water. Polyethylene glycols are preferred.

[0104] Polyalkylene glycols having a molecular weight of more than

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about 100 are useful herein. Useful are those having the following general formula:

(Chemical formulae 00015. See patent image)

wherein R⁹⁵ is selected from the group consisting of H, methyl, and mixtures thereof. When R⁹⁵ is H, these materials are polymers of ethylene oxide, which are also known as oleyethylene oxides, polyoxyethylenes, and polyethylene glycols. When R⁹⁵ is methyl, these materials are polymers of propylene oxide, which are also known as polypropylene oxides, polyoxypropylenes, and polypropylene glycols. When R⁹⁵ is methyl, it is also understood that various positional isomers of the resulting polymers can exist. Ethylene oxide polymers are preferred in view of their generally good water solubility, dispersibility, and transparency. Polyethylene-polypropylene glycols and polyoxyethylene-polyoxypropylene copolymer polymers having good dispersibility and transparency may also be useful. In the above

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structure, x3 has an average value of from about 4 to about 600, preferably from about 6 to about 120, and more preferably from about 10 to about 40. Polyethylene glycol polymers useful herein are Carbowax PEG 600 wherein R⁹⁵ equals H and x3 has an average value of about 12, available from Amerchol Inc., and Polyethylene Glycol #1000 wherein R⁹⁵ equals H and x3 has an average value of about 20 available from Kanto Chemical Co., Ltd.

Aqueous Carrier

[0105] The compositions of the present invention comprise an aqueous carrier. Aqueous carriers useful herein include water and/or water-soluble solvents. Water is useful herein. Deionized water is preferably used. Water from natural sources including mineral cations can also be used, depending on the desired characteristic of the product.

[0106] Water-soluble solvents such as lower alkyl alcohols and polyhydric alcohols are useful herein. The lower alkyl alcohols useful

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herein are monohydric alcohols having 1 to 6 carbons, more preferably ethanol and isopropanol. The polyhydric alcohols useful herein include propylene glycol, hexylene glycol, glycerin, propane diol, ethylene glycol, diethylene glycol, sorbitol, and other sugars which are in liquid form at ambient temperature.

[0000] Rinse Aid System

[0107] The composition of the present invention may further contain a rinse aid system for effective rinsing of the shampoo composition and soils from the hair by reducing suds, and/or reducing water hardness. The rinse aid system may be provided within the conditioning composition, or as an independent composition. When the rinse aid system is provided as an independent composition, it is preferably released in the water simultaneously with the conditioning composition.

[0108] The rinse aid system is selected from the group consisting of a

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pH control agent for suppressing the pH to below 6.5, a suds suppressing agent, a metal ion control agent, a crystal growth inhibitor, a dispersant polymer, a builder, and mixtures thereof. Preferably a mixture is used. Preferably a suds suppressing agent is comprised in the rinse aid system.

[0000] pH Control Agents

[0109] Inorganic and organic acids useful as pH control agents include, for example, carboxylate acids, such as citric and succinic acids, polycarboxylate acids, such as polyacrylic acid, and also acetic acid, boric acid, malonic acid, adipic acid, fumaric acid, lactic acid, glycolic acid, tartaric acid, tartronic acid, maleic acid, their derivatives and any mixtures of the foregoing.

[0110] A pH buffering agent may be used to maintain the desired pH range upon dissolving/dispersing of the composition. Materials useful as

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pH buffering agents include alkali metal salts of carbonates, preferably

sodium bicarbonate, polycarbonates, sesquicarbonates, silicates, polysilicates, borates, metaborates, phosphates, preferably sodium phosphate such as sodium hydrogenophosphate, polyphosphate like sodium tripolyphosphate, alluminates, and mixtures thereof, and preferably are selected from alkali metal salts of carbonates, phosphates, and mixtures thereof.

[0000] Suds Suppressing Agent

[0111] Suds suppressing agents useful herein include antifoam compounds. Antifoam compounds for use herein are silica components. Preferably, these silica components are used in combination with the silicone compound described above as a conditioning agent. The term "silicone" as used herein, and in general throughout the industry, encompasses a variety of relatively high molecular weight polymers containing siloxane units and hydrocarbyl group of various types like the

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polyorganosiloxane oils, such as polydimethyl-siloxane, dispersions or emulsions of polyorganosiloxane oils or resins, and combinations of polyorganosiloxane with silica particles wherein the polyorganosiloxane is chemisorbed or fused onto the silica. Silica components useful for suds suppressors are well known in the art and are, for example, disclosed in U.S. Pat. No. 4,265,779, issued May 5, 1981 to Gandolfo et al and European Patent Application No. 89307851.9, published Feb. 7, 1990, by Starch, M. S. Other silicone suds suppressers are disclosed in U.S. Pat. No. 3,455,839 which relates to compositions and processes for defoaming aqueous solutions by incorporating therein small amounts of polydimethylsiloxane fluids. Mixtures of silicone and silanated silica are described, for instance, in German Patent Application DOS 2,124,526. Examples of suitable silicone antifoam compounds are the combinations of polyorganosiloxane with silica particles commercially available from Dow Corning, SE39 available from Wacker Chemie, and TSAT775 available from General Electric.

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[0112] Other antifoam compounds include the monocarboxylic fatty acids and soluble salts thereof, such as those having hydrocarbyl chains of 10 to about 24 carbon atoms, preferably 12 to 18 carbon atoms like the tallow amphopolycarboxyglycinate commercially available under the trade name TAPAC. Suitable salts include the alkali metal salts such as sodium, potassium, and lithium salts, and ammonium and alkanolammonium salts.

[0113] Other suitable antifoam compounds include, for example, high molecular weight hydrocarbons such as paraffin, light petroleum, odorless hydrocarbons, fatty esters (e.g. fatty acid triglycerides, glyceryl derivatives, polysorbates), fatty acid esters of monovalent alcohols, aliphatic C₁sub18-C₁sub40 ketones (e.g. stearone) N-alkylated amino triazines such as tri- to hexa-alkylmelamines or di- to tetra alkyl diamine chlorotriazines formed as products of cyanuric chloride with two or three moles of a primary or secondary amine containing 1 to 24 carbon atoms, propylene oxide, bis stearic acid amide and monostearyl phosphates such as monostearyl alcohol phosphate ester and monostearyl

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di-alkali metal (e.g., K, Na, and Li) phosphates and phosphate esters, quaternary ammonium compounds, di-alkyl quaternary compounds, poly functionalised quaternary compounds, and nonionic polyhydroxyl derivatives.

[0114] Copolymers of ethylene oxide and propylene oxide, particularly the mixed ethoxylated/propoxylated fatty alcohols with an alkyl chain length of from 10 to 16 carbon atoms, a degree of ethoxylation of from 3 to 30 and a degree of propoxylation of from 1 to 10, are also suitable antifoam compounds for use herein.

[0115] Other suds suppressors useful herein comprise secondary C₆-C₁₆ alkyl alcohols having a C₁-C₁₆ chain like the 2-Hexyldecanol commercially available under the trade name ISOFOL16, 2-Octyldodecanol commercially available under the tradename ISOFOL20, and 2-butyl octanol, which is available under the trademark ISOFOL 12 from Condea. A preferred alcohol is 2-butyl octanol, which is available from

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Condea under the trademark ISOFOL 12. Mixtures of secondary alcohols are available under the trademark ISALCHEM 123 from Enichem.

[0000] Metal Ion Control Agents

[0116] Heavy metal ion (HMI) sequestrants which act to sequester (chelate) heavy metal ions are useful herein. These components may have calcium and magnesium chelation capacity, but preferentially they bind heavy metal ions such as iron, manganese and copper. These compounds are even more desired when the water is a tap water of low quality and consequently that which comprises a high level of HMI.

[0117] Heavy metal ion sequestrants, which are acidic in nature, having for example phosphonic acid or carboxylic acid functionalities, may be present either in their acid form or as a complex/salt with a suitable counter cation such as an alkali or alkaline metal ion, ammonium, or substituted ammonium ion, or any mixtures thereof.

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[0118] Suitable heavy metal ion sequestrants for use herein include the organo aminophosphonates, such as the amino alkylene poly (alkylene phosphonates) and nitrilo trimethylene phosphonates. Preferred organo aminophosphonates are diethylene triamine penta (methylene phosphonate) and hexamethylene diamine tetra (methylene phosphonate).

[0119] Other suitable heavy metal ion sequestrants for use herein include nitrilotriacetic acid and polyaminocarboxylic acids such as ethylenediaminetetraacetic acid, ethylenetriamine pentaacetic acid, or ethylenediamine disuccinic acid. A further suitable material is ethylenediamine-N,N'-disuccinic acid (EDDS), most preferably present in

the form of its S,S isomer, which is preferred for its biodegradability profile. Still other suitable heavy metal ion sequestrants for use herein are iminodiacetic acid derivatives such as 2-hydroxyethyl diacetic acid or glyceryl imino diacetic acid.

[0000] Crystal Growth Inhibitors

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[0120] Non-limiting examples of carboxylic compounds which serve as crystal growth inhibitors include carboxylic compounds such as glycolic acid, phytic acid, polycarboxylic acids, polymers and co-polymers of carboxylic acids and polycarboxylic acids, and mixtures thereof. The inhibitors may be in the acid or salt form. Preferably the polycarboxylic acids comprise materials having at least two carboxylic acid radicals which are separated by not more than two carbon atoms (e.g., methylene units). Further suitable polycarboxylates include ether hydroxypolycarboxylates, polyacrylate polymers, copolymers of maleic anhydride and the ethylene ether or vinyl methyl ethers of acrylic acid. Copolymers of 1,3,5-trihydroxybenzene, 2, 4, 6-trisulphonic acid, and carboxymethyloxysuccinic acid are also useful. Alkali metal salts of polyacetic acids, for example, ethylenediamine tetraacetic acid and nitritotriacetic acid, and the alkali metal salts of polycarboxylates, for example, mellitic acid, succinic acid, oxydisuccinic acid, polymaleic acid, benzene 1,3,5-tricarboxylic acid, carboxymethyloxysuccinic acid, are suitable for use in the present invention as crystal growth

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inhibitors.

[0121] The polymers and copolymers which are useful as crystal growth inhibitors have a molecular weight which is preferably greater than about 500 daltons to about 100,000 daltons, more preferably to about 50,000 daltons.

[0122] Examples of commercially available materials for use as crystal growth inhibitors include, polyacrylate polymers Good-Rite(R) ex BF Goodrich, Acrysol(R) ex Rohm & Haas, Sokalan(R) ex BASF, and Norasol(R) ex Norso Haas. Preferred are the Norasol(R) polyacrylate polymers, more preferred are Norasol(R) 410N (MW 10,000) and Norasol(R) 440N (MW 4000) which is an amino phosphonic acid modified polyacrylate polymer, and also more preferred is the acid form of this modified polymer sold as Norasol(R) QR 784 (MW 4000) ex Norso-Haas.

[0123] Polycarboxylate crystal growth inhibitors include citrates,

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e.g., citric acid and soluble salts thereof (particularly sodium salt), 3,3-dicarboxy-4-oxa-1,6-hexanediolates and related compounds further disclosed in U.S. Pat. No. 4,566,984 incorporated herein by reference, C₅-C₂₀ alkyl, C₅-C₂₀ alkenyl succinic acid and salts

thereof, of which dodecetyl succinate, lauryl succinate, myristyl succinate, palmityl succinate, 2-dodecenyldsuccinate, 2-pentadecenyl succinate, are non-limiting examples.

[0124] Organic diphosphonic acid are also suitable for use as crystal growth inhibitors. For the purposes of the present invention the term "organic diphosphonic acid" is defined as "an organo-diphosphonic acid or salt which does not comprise a nitrogen atom". Preferred organic diphosphonic acids include C₁-C₄ diphosphonic acid, preferably C₂ diphosphonic acid selected from the group consisting of ethylene diphosphonic acid, (small alpha, Greek)-hydroxy-2 phenyl ethyl diphosphonic acid, methylene diphosphonic acid, vinylidene-1,1-diphosphonic acid, 1,2-dihydroxyethane-1,1-diphosphonic

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acid, hydroxy-ethane 1,1 diphosphonic acid, the salts thereof, and
mixtures thereof. More preferred is hydroxyethane-1,1-diphosphonic acid
(HEDP).

[0125] Still useful herein as crystal growth inhibitor are the organic monophosphonic acid. Organo monophosphonic acid or one of its salts or complexes is also suitable for use herein as a crystal growth inhibitor. By organo monophosphonic acid it is meant herein an organo monophosphonic acid which does not contain nitrogen as part of its chemical structure. This definition therefore excludes the organo aminophosphonates, which however may be included in compositions of the invention as heavy metal ion sequestrants.

[0126] The organo monophosphonic acid component may be present in its acid form or in the form of one of its salts or complexes with a suitable counter cation. Preferably any salts/complexes are water soluble, with the alkali metal and alkaline earth metal salts/complexes being

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especially preferred.

[0127] A preferred organo-monophosphonic acid is
2-phosphonobutane-1,2,4-tricarboxylic acid commercially available from
Bayer under the trade name of Bayhibit.

[0000] Dispersant Polymers

[0128] Suitable polymeric dispersing agents include polymeric polycarboxylates and polyethylene glycols, although others known in the art can also be used. It is believed, though it is not intended to be limited by theory, that polymeric dispersing agents enhance overall rinsing performance.

[0129] Polymeric polycarboxylate materials can be prepared by polymerizing or copolymerizing suitable unsaturated monomers, preferably in their acid form. Unsaturated monomeric acids that can be polymerized

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to form suitable polymeric polycarboxylates include acrylic acid, maleic acid (or maleic anhydride), fumaric acid, itaconic acid, aconitic acid, mesaconic acid, citraconic acid and methylenemalonic acid. The presence in the polymeric polycarboxylates herein of monomeric segments, containing no carboxylate radicals such as vinylmethyl ether, styrene, ethylene, etc. is suitable provided that such segments do not constitute more than about 40% by weight.

[0130] Particularly suitable polymeric polycarboxylates can be derived from acrylic acid. Such acrylic acid-based polymers which are useful herein are the water-soluble salts of polymerized acrylic acid. The average molecular weight of such polymers in the acid form preferably ranges from about 2,000 to 10,000, more preferably from about 4,000 to 7,000 and most preferably from about 4,000 to 5,000. Water-soluble salts of such acrylic acid polymers can include, for example, the alkali metal, ammonium and substituted ammonium salts. Soluble polymers of this type are known materials.

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[0131] Acrylic/maleic-based copolymers may also be used as a preferred component of the dispersing/anti-redeposition agent. Such materials include the water-soluble salts of copolymers of acrylic acid and maleic acid. The average molecular weight of such copolymers in the acid form preferably ranges from about 2,000 to 100,000, more preferably from about 5,000 to 75,000, most preferably from about 7,000 to 65,000. The ratio of acrylate to maleate segments in such copolymers will generally range from about 30:1 to about 1:1, more preferably from about 10:1 to 2:1. Water-soluble salts of such acrylic acid/maleic acid copolymers can include, for example, the alkali metal, ammonium and substituted ammonium salts. Soluble acrylate/maleate copolymers of this type are known materials which are described in European Patent Application No. 66915, published Dec. 15, 1982, as well as in EP 193,360, published Sep. 3, 1986, which also describes such polymers comprising hydroxypropylacrylate. Still other useful dispersing agents include the maleic/acrylic/vinyl alcohol terpolymers. Such materials are also disclosed in EP 193,360, including, for example, the 45/45/10 terpolymer

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of acrylic/maleic/vinyl alcohol.

[0132] Polyaspartate and polyglutamate dispersing agents may also be used, especially in conjunction with zeolite builders. Dispersing agents such as polyaspartate preferably have a molecular weight (avg.) of about 10,000.

[0133] A group of preferred clay soil removal/anti-redeposition agents are the cationic compounds disclosed in European Patent Application 111,965, Oh and Gosselink, published Jun. 27, 1984. Other clay soil removal/antiredeposition agents which can be used include the ethoxylated amine polymers disclosed in European Patent Application 111,984, Gosselink, published Jun. 27, 1984; the zwitterionic polymers disclosed

in European Patent Application 112,592, Gosselink, published Jul. 4, 1984; and the amine oxides disclosed in U.S. Pat. No. 4,548,744, Connor, issued Oct. 22, 1985. Other clay soil removal and/or anti-redeposition agents known in the art can also be utilized in the compositions herein.

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Another type of preferred anti-redeposition agent includes the carboxymethylcellulose (CMC) materials.

[0000] Builders

[0134] The rinse aid used in the compositions of the present invention may also comprise builders to assist in controlling mineral hardness. Inorganic as well as organic builders can be used.

[0135] Inorganic or P-containing builders include, but are not limited to, the alkali metal, ammonium and alkanolammonium salts of polyphosphates (exemplified by the tripolyphosphates, pyrophosphates, and glassy polymeric meta-phosphates), phosphonates, phytic acid, silicates, carbonates (including bicarbonates and sesquicarbonates), sulphates, and aluminosilicates. However, non-phosphate builders are required in some locales. Importantly, the compositions herein function surprisingly well even in the presence of the so-called "weak" builders (as compared with

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phosphates) such as citrate, or in the so-called "underbuilt" situation that may occur with zeolite or layered silicate builders.

[0136] Examples of silicate builders are the alkali metal silicates, particularly those having a SiO₂:Na₂O ratio in the range 1.6:1 to 3.2:1 and layered silicates, such as the layered sodium silicates; Na-SKS-6 is the trademark for a crystalline layered silicate marketed by Hoechst (commonly abbreviated herein as "SKS-6"). Unlike zeolite builders, the Na-SKS-6 silicate builder does not contain aluminum. Na-SKS-6 has the delta-Na₂SiO₅ morphology form of layered silicate. SKS-6 is a highly preferred layered silicate for use herein, but other such layered silicates, such as those having the general formula Na₂Si_xO_{2x+1}.yH₂O wherein M is sodium or hydrogen, x is a number from 1.9 to 4, preferably 2, and y is a number from 0 to 20, preferably 0 can be used herein. Various other layered silicates from Hoechst include NaSKS-5, NaSKS-7 and NaSKS-11, as the alpha, beta and gamma forms. As noted above, the delta-Na₂SiO₅ (Na-SKS-6 form) is most preferred for use herein.

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[0137] Aluminosilicate builders are useful in the present invention. Useful aluminosilicate ion exchange materials are commercially available. These aluminosilicates can be crystalline or amorphous in structure and can be naturally-occurring aluminosilicates or synthetically derived. A method for producing aluminosilicate ion exchange materials is disclosed in U.S. Pat. No. 3,985,669, Krummel, et al, issued Oct. 12, 1976.

Preferred synthetic crystalline aluminosilicate ion exchange materials useful herein are available under the designations Zeolite A, Zeolite P (B), Zeolite MAP and Zeolite X. Particularly preferred is Zeolite A. Dehydrated zeolites may also be used herein. Preferably, the aluminosilicate has a particle size of about 0.1-10 microns in diameter.

[0138] Citrate builders, e.g., citric acid and soluble salts thereof (particularly sodium salt), are polycarboxylate builders of particular importance for liquid detergent formulations due to their availability from renewable resources and their biodegradability.

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[0139] Also suitable in the compositions of the present invention are the 3,3-dicarboxy-4-oxa-1,6-hexanediates and the related compounds. Useful succinic acid builders include the C₅-C₂₀ alkyl and alkenyl succinic acids and salts thereof. A particularly preferred compound of this type is dodecenylsuccinic acid. Specific examples of succinate builders include: laurylsuccinate, myristylsuccinate, palmitylsuccinate, 2-dodecenylsuccinate (preferred), 2-pentadecenylsuccinate, and the like. Laurylsuccinates are the preferred builders of this group.

[0140] Fatty acids, e.g., C₁₂-C₁₈ monocarboxylic acids, can also be incorporated into the compositions alone, or in combination with the aforesaid builders, especially citrate and/or the succinate builders, to provide additional builder activity.

[0141] In situations where phosphorus-based builders can be used, the various alkali metal phosphates such as the well-known sodium

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tripolyphosphates, sodium pyrophosphate and sodium orthophosphate can be used. Phosphonate builders such as ethane-1-hydroxy-1,1-diphosphonate and other known phosphonates can also be used.

[0000] Additional Components

[0142] A wide variety of other additional components can be formulated into the present compositions. These include: other conditioning agents such as hydrolysed collagen with tradename Peptein 2000 available from Hormel, vitamin E with tradename Emix-d available from Eisai, panthenol available from Roche, panthenyl ethyl ether available from Roche, hydrolysed keratin, proteins, plant extracts, and nutrients; preservatives such as methyl chloroisothiazolinone, methyl isothiazolinone, benzyl alcohol, methyl paraben, propyl paraben and imidazolidinyl urea; thickeners such as hydroxyethyl cellulose, hydroxypropyl methylcellulose, polyacrylamide, and cetyl hydroxyethyl cellulose; salts, in general, such as potassium acetate and sodium

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chloride; coloring agents, such as any of the FD&C or D&C dyes; perfumes; ultraviolet and infrared screening and absorbing agents such as octyl salicylate; antidandruff agents such as zinc pyridinethione; and optical brighteners, for example polystyrylstilbenes, triazinstilbenes, hydroxycoumarins, aminocoumarins, triazoles, pyrazolines, oxazoles, pyrenes, porphyrins, imidazoles, and mixtures thereof.

EXAMPLES

[0143] The following examples further describe and demonstrate embodiments within the scope of the present invention. The examples are given solely for the purpose of illustration and are not to be construed as limitations of the present invention, as many variations thereof are possible without departing from the spirit and scope of the invention. Ingredients are identified by chemical or CTFA name, or otherwise defined below.

[0144] Examples 1 through 16 are hair conditioning compositions of the

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present invention which are used by dispersing in water to make a treated water and applying the treated water to the shampooed hair.

[0145]

(Table 00001. See patent image)

Method of Preparation

[0146] The compositions of Examples 1-16 as shown above can be prepared by any conventional method.

[0147] Examples 1-16 can be made by mixing the components, as necessary with agitation and elevated temperature. The resulting compositions provide a liquid form. The liquid form composition can be filled into a bottle having a pump providing unit dosage amount of the liquid. Unit dosage amount of this liquid form composition can be filled into a sachet

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made of plastic film which does not interact with the composition.

[0148] The embodiments disclosed and represented by the previous examples have many advantages. All Examples 1-16 have a turbidity of less than 200 NTU. When released in water to make a treated water, all Examples 1-16 immediately disperse after mixing with the hand, and provide treated water having a turbidity of less than 100 NTU.

[0149] Further, upon and after application to the shampooed hair, they can provide conditioning benefit such as soft and smooth hair feel, easy wet and dry hair coming, and shine.

[0150] It is understood that the examples and embodiments described herein are for illustrative purposes only and that various modifications or changes in light thereof will be suggested to one skilled in the art without departing from its spirit and scope.

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Exemplary or Independent Claim(s):

1. A method of conditioning the hair comprising the steps of:
 - (a) applying a shampoo composition comprising a detergentsurfactant to the hair;
 - (b) providing a treated water having a concentrated by weight of from 0.001% to 2% of a conditioning agent by dispersing a conditioning composition comprising:
 - (1) 0.01% to 50% by weight of the conditioning agent selected from the group consisting of mono long chain ammonium compounds, cationic surfactants, cationic polymers, silicone compounds, polyalkylene glycols and mixtures thereof; and
 - (2) an aqueous carrier;
 - (3) wherein the conditioning composition has a turbidity of no more than 200 NTU, and the treated water has a turbidity of no more than 100 NTU; and
 - (c) rinsing the hair treated with water;

wherein the steps (a) and (b) may be reversed.

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Non-exemplary or Dependent Claim(s):

2. The conditioning composition according to claim 1 comprising from about 1% to about 20% of the conditioning agent.
3. The conditioning composition of claim 1 comprising from about 1% to about 10% of a mono long-chain ammonium compound or hydrophilically substituted cationic surfactant and from about 1% to about 10% of a cationic polymer.
4. The conditioning composition of claim 1 comprising from about 0.01% to about 20% of a hydrophilically substituted silicone compound having substitute groups selected from the group consisting of alkoxy groups, amino groups, quaternary amino groups, and mixtures thereof.
5. The conditioning composition of claim 1 further comprising a rinse aid system selected from the group consisting of a pH control agent for suppressing the pH to below 6.5, a suds suppressing agent, a metal ion control agent, a crystal growth inhibitor, a dispersant polymer, a builder, and mixtures thereof.

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6. The conditioning composition of claim 5 wherein the rinse aid system comprises a suds suppressing agent.

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Derwent Accession: 2003-558821

UTILITY

Personal cleansing compositions comprising silicone resin-containing adhesives

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	Publication Number	Kind	Date	Application Number	Filing Date
Main Patent	US 20050100522	A1	20050512	US 200413754	20041216
Division	PENDING			US 2002255446	20020926
Provisional				US 60-325021	20010926

US Classification on document (Main): 424070120

International Classification (Edition 07): A61K-007/06

Secondary: A61K-007/11

Fulltext Word Count: 7657

Number of Claims: 9

Exemplary or Independent Claim Number(s): 1

References to Related Applications:

CROSS REFERENCE TO RELATED APPLICATIONS

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DIALOG(R)File 654:US PAT.FULL.

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[0001] This application is a divisional of application Ser. No. 10/255,446, filed Sep. 26, 2002, and claims the benefit of U.S. Provisional Application No. 60/325,021, filed Sep. 26, 2001.

Abstract:

[00000] Disclosed are personal cleansing compositions for rinse-off application to the hair, nails or skin. These compositions comprise a silicone-resin based adhesive including a silicone resin copolymer as a condensation product of an organosiloxane fluid and a silicone resin; a cleansing surfactant; and a carrier liquid. The personal cleansing compositions can also comprise as the silicone-resin based adhesive, in addition to or in place of the silicone resin copolymer, a combination of an organosiloxane resin and a diorganosiloxane fluid at a weight ratio of said resin to said fluid of from about 1:9 to about 10:1. The personal cleansing compositions provide hair styling benefits when applied to the hair, and when applied to the skin, barrier protection from surfactants or other

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materials having skin irritation potential.

Summary of the Invention:

FIELD OF THE INVENTION

[0002] The present invention relates to personal cleansing compositions for rinse-off application and which comprise select silicone-resin containing adhesives. The compositions provide effective delivery and deposition of the silicone-resin containing adhesives as film-forming polymers onto hair, nails and skin.

BACKGROUND OF THE INVENTION

[0003] There are many different personal cleansing compositions that have been described in the literature or otherwise available to consumers as commercial personal cleansing products. Such products include hair shampoos, body or hand cleansers, and other functionally similar products designed to topically cleanse various parts of the body.

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[0004] Some of the personal cleansing compositions that are known or have otherwise been described in the literature contain various film forming polymers, including film-forming polymers in shampoo compositions that provide hair styling or conditioning benefits, and film-forming polymers in skin cleansing compositions to provide various cosmetic or active deposition benefits as well as skin conditioning benefits.

[0005] It has now been found that certain film-forming polymer materials can now be formulated into a personal cleansing composition to provide a variety of benefits. These film-forming materials are defined as those materials containing an organosiloxane resin in combination with a diorganosiloxane fluid, wherein the weight ratio of the organosiloxane resin to the diorganosiloxane fluid is from about 1:9 to about 10:1, or wherein the two materials are formulated into the composition as a silicone resin copolymer formed by the condensation of a organosiloxane resin and a diorganosiloxane fluid.

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[0006] It has also been found that these new personal cleansing compositions, in addition to providing yet another personal cleansing composition not previously described in the art, also provide some unique benefits. When formulated into a shampoo composition, it has been found that the compositions provide hair styling benefits and hair volume reduction. When formulated into a skin cleansing composition, it has been found that the film-forming polymer readily deposits onto the skin even though it is formulated into a rinse-off cleansing composition, and helps eliminate or reduce skin irritation associated with the surfactant materials in the composition as well as other materials having similar skin irritation potential.

[0007] It is therefore and object of the present invention to provide

an alternative personal cleansing composition not previously described or otherwise known in the various arts, and which provides improved delivery of a film-forming polymer to the hair, nails or skin. It is a further object of the present invention to provide a personal cleansing

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composition that provides a base composition that helps to eliminate or minimize skin irritation associated with the topical application of various surfactants and other materials having similar skin irritation potential.

SUMMARY OF THE INVENTION

[0008] The present invention relates to personal cleansing compositions for topical rinse-off application to the hair, nails or skin. These compositions are rinse-off formulations that comprise from about 0.05% to about 40% by weight of a silicone resin-based adhesive, wherein the adhesive includes a silicone resin copolymer as a condensation product of a diorganosiloxane fluid and an organosiloxane resin; from about 0.5% to about 30% by weight of a cleansing surfactant; and from about 20% to about 99% by weight of a carrier liquid.

[0009] The present invention also relates to personal cleansing

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compositions for topical rinse-off application to the hair, nails or skin, said compositions comprising from about 0.05% to about 40% by weight of a silicone-resin based adhesive, wherein the adhesive is provided by a combination of an organosiloxane resin and an organosiloxane fluid, wherein the weight ratio of the organosiloxane resin to the diorganosiloxane fluid ranges from about 1:9 to about 10:1.

[0010] It has been found that the cleansing compositions of the present invention are effective in providing styling benefits when applied to and rinsed from the hair, including hair volume reduction and other hair cosmetic benefits made possible by the deposition onto hair of the film-forming materials as defined herein.

[0011] It is also believed that the personal cleansing compositions of the present invention provide adhesive and/or film-forming benefits when applied to the skin, even though the composition is a rinse-off cleansing

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composition. The film forming benefits are especially useful in protecting the skin from the irritation potential of different cleansing surfactants or other ingredients that tend to be irritating to the skin. It is believed that the compositions provide effective deposition of a cosmetically desirable film onto the skin during cleansing and subsequent rinsing, that provides protection of the skin from skin irritants within

and external to the cleansing composition.

Exemplary or Independent Claim(s):

1. Personal cleansing compositions for application to the hair, nails or skin, said compositions comprising:
 - (A) from about 0.1% to about 30% by weight of a film-forming material comprising an organosiloxane resin and a diorganosiloxane fluid at a weight ratio of said resin to said fluid of from about 1:9 to about 10:1.
 - (B) from about 0.5% to about 30% by weight of a cleansing surfactant; and

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- (C) from about 20% to about 99% by weight of a carrier liquid; wherein the personal cleansing composition is a rinse-off composition for application to the hair or skin.

Non-exemplary or Dependent Claim(s):

2. The personal cleansing composition of claim 1 wherein the weight ratio of the organosiloxane resin to the diorganosiloxane fluid is from about 1:1 to about 3:1
3. The personal cleansing composition of claim 1 wherein the diorganosiloxane fluid has a viscosity of from about 100 to about 1,000,000 cs at 25 degree C. and the organic substituents on the diorganopolysiloxane fluid are selected from the group consisting of methyl, ethyl, and vinyl radicals.
4. The personal cleansing composition of claim 1 wherein the organosiloxane resin is a condensation product of SiO_{2} and $\text{R}_{3}(\text{SiO})_{0.5}$ units; wherein each R group is independently selected from the group consisting of methyl, ethyl,

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- propyl and vinyl radicals; and the molar ratio of SiO_{2} units to $\text{R}_{3}(\text{SiO})_{0.5}$ units in the silicone resin is from about 0.6 to about 1.0.
5. The personal cleansing composition of claim 1 wherein the organosiloxane resin represents from about 1% to about 10% by weight of the composition, and the diorganosiloxane fluid represents from about 1% to about 10% by weight of the composition.
6. The personal cleansing composition of claim 1 wherein the carrier liquid is an aqueous liquid and the composition comprises from about 20% to about 98% by weight of water.
7. The personal cleansing composition of claim 1 wherein the composition contains from about 30% to about 90% by weight of water.
8. The personal cleansing composition of claim 1, wherein the composition further comprises from about 0.1% to about 20% by weight of solid particulates.
9. A method of cleansing the skin, said method comprising the topical application of the composition of claim 1 to the skin followed by

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rinsing of the applied area of the skin with water.

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6081608

Derwent Accession: 2003-513437

UTILITY

Topical compositions containing fluid-absorbent solids and adhesive fluids

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Examiner: Barts, Samuel

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DIALOG(R)File 654:US PAT.FULL.
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Legal Representative: Clay, Cynthia L.; Howell, John M.; Dressman, Marianne

	Publication Number	Kind	Date	Application Number	Filing Date
Main Patent	US 6887859	B2	20050503	US 2002255283	20020926
Related Publ	US 20030118533	A1	20030626		
Provisional				US 60-325023	20010926

US Term Extension: 122 days

US Classification on document (Main): 514060000

(X-ref): 514057000; 536045000; 536056000; 424065000

Examiner Field of Search (US): 514060; 514057; 536045; 536056; 424065

International Classification (Edition 7): A61K-317/15

Secondary: A61K-317/18; A61K-317/17; A61K-007/32

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Date Main US

Patent Number	Kind	YYYYMM	Class	Inventor
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		YYYYMM	Class	
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Fulltext Word Count: 9391
Number of Claims: 48
Exemplary or Independent Claim Number(s): 1
Number of Drawing Sheets: 0
Number of Figures: 0
Number of US cited patent references: 34
Number of non-US cited patent references: 8

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Number of non-patent cited references: 2

References to Related Applications:

CROSS REFERENCE TO RELATED APPLICATION
[0001] This application claims the benefit of U.S. Provisional Application No. 60/325,023, filed Sep. 26, 2001.

Abstract:

[00000] Disclosed are topical compositions, including methods of applying those compositions to absorb sweat and sebum from the skin, wherein the compositions comprise (A) fluid-absorbent solids having a Water Absorption Value of at least about 0.5 grams/gram; (B) an adhesive fluid; and (C) a liquid carrier; herein the composition has an Average Wear Index Value of at least about 60%. The topical compositions provide effective delivery and deposition of the fluid-absorbent solid onto the skin from an extended wear composition.

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Summary of the Invention:

FIELD OF THE INVENTION

[0002] The present invention relates to topical compositions containing moisture-absorbent solids in combination with an adhesive fluid. The topical compositions provide effective delivery and deposition of the fluid-absorbent solids onto the skin from an extended wear composition.

BACKGROUND OF THE INVENTION

[0003] Body powders of various types are well known for topical application to the skin to help provide absorption of sebaceous secretions and sweat. These products are commonly applied to the skin after showering or bathing, and are especially useful when applied to those areas of the skin that are more prone to perspiration wetness throughout the day. The applied powders readily adhere to the moist, recently-cleansed skin and thus provide a clean, dry feeling immediately after application. These products are often in the form of solid, flowable powders that contain fluid-absorbent particulates such as

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colloidal kaolin, starch, precipitated chalk, magnesium carbonate and
other functionally similar materials.

[0004] Although body powders are effective in providing immediate fluid-absorbent benefits after application, they are not particularly effective over prolonged periods. Once applied to the skin, these powders almost immediately begin to fall off and wear away. Over extended periods of time, very little of the originally applied powder remains on the skin, so that perspiration wetness or sebum secretions that flow onto the surface of the skin over time are no longer absorbed and therefore are no longer effectively removed by the applied powders. As perspiration wetness and associated oils remain and accumulate on the surface of the skin, the skin begins to feel oily and dirty.

[0005] One method of improving the performance of body powders has been to reapply the powders to the desired area of the skin as needed throughout the day to help maintain the clean, dry feeling associated

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with the application of such fluid-absorbent materials to the skin. For most people, however, frequent reapplication of a body powder throughout the day is neither desirable nor practical. Even a single application of a body powder tends to be messy, especially when applied to those areas of the skin that come in contact with clothing. Moreover, these powders tend to rub off more easily when the skin comes in contact with clothing, leaving the skin unprotected with fluid-absorbent body powder, much of which deposits onto the clothing leaving a white or chalking appearing residue on the clothing.

[0006] Still other methods of improving the extended wear characteristics of common body powders involves the addition of adhesive materials to the powders such as water-insoluble metallic soaps (e.g., zinc and magnesium stearates), emollients such as cetyl or stearyl alcohol and glyceryl monostearate, petroleum jelly, mineral oil, and similar other materials. These added adhesives help improve deposition and adherence of the powders to the skin, thus improving the extended

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wear characteristics of the body powder. Although these adhesives provide extended wear properties to the product, the powder still tends to wear away shortly after application, readily sloughs off and forms a visible residue on clothing, and is messy to apply. Many of these adhesives can also interfere with the fluid-absorbent efficacy of the body powders, as well as provide for poor skin feel or other undesirable cosmetic characteristics.

[0007] It has now been found that fluid-absorbent solids can be selected and formulated within a liquid composition to provide effective deposition of the solids onto the skin, while also providing adhesion and

maintenance of those solids onto the skin over prolonged periods of time, along with desirable skin feel and other cosmetic characteristics. It has been found that such a formulation can be achieved by preparing a topical liquid composition comprising fluid-absorbent solids having a Water Absorption Value as defined herein of at least about 0.5 grams/gram, an adhesive fluid such as a solubilized adhesive material,

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and a liquid carrier, wherein the liquid composition has an Average Wear Index as defined herein of at least about 25%. These liquid compositions are easier and less messy to apply than conventional body powders, can result in less visible residue on surrounding clothing, and can provide improved fluid-absorption benefits as compared to similar other materials containing other well known adhesives.

[0008] It is therefore an object of the present invention to provide a body powder formulation that provides moisture and other fluid absorbing benefits over prolonged periods of time. It is a further object of the present invention to provide such a formulation from a liquid composition that is less messy to apply than conventional dry powders and has desirable skin feel and cosmetic benefits. It is still a further object of the present invention to provide such a liquid composition by combining a suitable liquid carrier, an adhesive fluid, and certain moisture-absorbent solids, to provide an extended wear product.

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SUMMARY OF THE INVENTION

[0009] The present invention relates to topical compositions that comprise fluid-absorbent solids having a Moisture Absorption Value as defined herein of at least 0.5 grams/gram, an adhesive fluid, and a suitable liquid carrier, wherein the topical composition provides extended wear benefits characterized by an Average Wear Index as defined herein of at least about 25%.

[0010] It has been found that the topical liquid compositions of the present invention provide effective delivery and deposition of fluid-absorbent solids onto the skin, while also providing adhesion and maintenance of those solids onto the skin over prolonged periods of time. These compositions when applied topically provide absorption of sweat and sebum from the skin, and thus provide effective removal of such fluids from the skin. These topical fluid-absorption benefits can be maintained over prolonged periods of time, and thus provide topical fluid-absorption benefits throughout the day after just a single application. These

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compositions can also provide other extended wear benefits as well as the effective delivery of fluid-absorbent solids, all from a liquid or rather than a powder base matrix.

DETAILED DESCRIPTION

[0011] The topical compositions of the present invention comprise fluid-absorbent solid particulates, an adhesive fluid, and a liquid carrier. These and other essential limitations of the compositions and methods of the present invention, as well as many of the optional ingredients suitable for use herein, are described in detail hereinafter.

[0012] The term "adhesive" and as used herein, unless otherwise specified, refers to any solid material that can be solubilized within the compositions of the present invention, and that helps provide the composition with an Average Wear Index as defined herein of at least about 25%. The term "adhesive fluid" therefore refers to the adhesive material within the compositions, wherein the adhesive is solubilized and

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in liquid form within the compositions.

[0013] The term "fluid-absorbent solid" as used herein, unless otherwise specified, refers to those materials that absorb moisture or other fluids such as sebaceous secretions and moisture-containing sweat from the surface of the skin.

[0014] The term "anhydrous" as used herein, unless otherwise specified, refers to those compositions or materials containing less than about 10%, more preferably less than about 5%, even more preferably less than about 3%, even more preferably zero percent, by weight of water. The topical compositions of the present invention can be aqueous or anhydrous, but are preferably anhydrous.

[0015] The term "volatile" as used herein, unless otherwise specified, refers to those materials that have an average boiling point at one (1) atmosphere of pressure (atm) of less than about 250 degree C., more

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typically less than about 235 degree C. at one (1) atm.

[0016] The term "ambient conditions" as used herein refers to surrounding conditions at one atmosphere of pressure, 50% relative humidity, and 25 degree C.

[0017] All viscosity values as described herein, unless otherwise specified, are expressed in terms of centistokes (cs) and are determined or otherwise measure by a Brookfield DV-II+ viscometer at 1 rpm at 25 degree C.

[0018] All percentages, parts and ratios as used herein are by weight of the total composition, unless otherwise specified. All such weights as they pertain to listed ingredients are based on the active level and, therefore, do not include solvents or by-products that may be included in commercially available materials, unless otherwise specified.

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[0019] The topical compositions and methods of the present invention can comprise, consist of, or consist essentially of the essential elements and limitations of the invention described herein, as well as any additional or optional ingredients, components, or limitations described herein or otherwise useful in personal care compositions intended for topical application to the skin.

Product Form

[0020] The topical compositions of the present invention can be formulated in any of a variety of product forms, so long as the product forms contain the essential ingredients as defined herein. These products are typically and preferably in liquid or semi-liquid form, more preferably in liquid form. Non-limiting examples of such product forms include soft solids, lotions or creams, aerosol sprays, aerosol foams, pump sprays, and so forth.

[0021] These products can be prepared and used as either leave-on,

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rinse-off or wipe-off formulations, but are preferably prepared and used as leave-on formulations. These products can be formulated to deliver any of a variety of personal care or cosmetics functions in addition to the fluid-absorbing functions, including personal care or cosmetic functions associated with color or other cosmetics, shampoos or other hair care products, skin cleansing products, topical pharmaceuticals, topical skin active compositions, or any other product form that provides for topical delivery of any suitable skin active agent or benefit.

[0022] The topical compositions of the present invention, under ambient conditions, are preferably in liquid form and have a preferred viscosity of less than 100,000 centistokes, more preferably from about 10 to about 50,000 centistokes, even more preferably from about 20 to about 30,000 centistokes, as measured at 25 degree C., although the selected viscosity of the composition will vary greatly depending upon variables such as product form, selected ingredients, intended product use, and so forth.

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Adhesive Fluid

[0023] The topical compositions of the present invention comprise an adhesive material that is suitable for topical application to the skin. Any such adhesive material, which can include both solid and liquid adhesives prior to formulation, is suitable for use herein provided that it ultimately forms a dispersed liquid within the composition, or is otherwise solubilized within the liquid carrier component of the composition, to thus form an adhesive fluid within the composition of the present invention. The adhesive fluid can include conventional adhesive materials such as those associated with bandages, pharmaceutical patches, paper products, etc., or can also include various film-forming polymers that do not otherwise inherently deliver tack or stickiness, but nonetheless provide the composition with enhanced Average Wear Index values as defined herein.

[0024] The adhesive fluid for use in the compositions of the present

invention preferably comprises an adhesive material that is inherently

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solid under ambient conditions, but has been solubilized in the liquid carrier component of the topical compositions of the present invention. These adhesive materials are preferably solid polymeric materials, silicone-containing or otherwise, that are solubilized and in liquid form within the composition of the present invention. Most preferred are silicone resin copolymer adhesives and adhesive materials comprising a organosiloxane resin in combination with a diorganosiloxane fluid. Each of these preferred adhesive fluid materials is described in more detail hereinafter

[0025] Other adhesive materials for use herein include well known adhesive materials such as those categorized as acrylic, urethane, cyanoacrylates, silicone (other than those otherwise described herein), polyolefins (vinyls) and combinations thereof.

[0026] Non-limiting examples of other adhesive materials suitable for use in the compositions of the present invention include Amphomer LV-71

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(Octylacrylamide/Acrylates/Butylaminoethyl methacrylate Copolymer); Luvimer 100P (acrylates copolymer); SA70 in D5 (Polyacrylates-g-polysiloxane, cyclomethicone (soluntion w/75% D5); Luviskol VA73W (VP/VA Copolymer (solution with 50% copolymer)); Pemulen TR2 (Acrylates/C10-30 Alkyl Acrylate Crosspolymer); Diahadol JG (60% in IDD) (Butyl Acrylate/Ethylhexyl Methacrylate Copolymer); Luviskol VA 64W (VP/VA Copolymer); Ganex V220 (40% in IDD) (Eicosene Copolymer, Isododecane); Luviskol K30 (PVP); Bio PSA 4500 (58% in IDD) (Trimethylated silica treated with dimethyl siloxane, Isododecane); Luviskol Plus (Polyvinylcaprolactam); Luviflex Soft (Acrylates Copolymer); Polyderm PE/PA (Polyurethane); Luviskol K90 (PVP); Dermacryl LT (Acrylates/Octylacrylamide Copolymer); AMP-Regular (Aminomethyl propanol); Luviset PUR (Polyurethane-1); Bio PSA 4500 (40% in IDD) (Trimethylated silica treated with dimethyl siloxane, Isododecane);

[0000] Silicone Resin Copolymer Adhesives

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[0027] The topical compositions of the present invention include adhesive materials in the adhesive fluid component, wherein the adhesive material is a silicone resin copolymer derived from the condensation or other functionally similar reaction or combination of an organosiloxane resin with a diorganopolysiloxane fluid. These silicone resin copolymers are known for use as adhesives in various consumers' products and applications, and are now formulated into the compositions of the present invention for the purpose of improving the deposition or adherence of fluid-adsorbent solids onto the skin.

[0028] The concentration of the silicone resin copolymer in the topical compositions of the present invention varies considerably depending upon other ingredients in the composition as well as the intended product form. Generally, silicone resin copolymer concentrations range from about 0.05% to about 40%, preferably from about 2% to about 35%, even more preferably from about 15% to about 35%, by weight of the topical composition.

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[0029] The silicone resin copolymers for use as an adhesive material herein preferably have an average molecular weight of at least about 15,000, more preferably from about 15,000 to about 4 million, even more preferably from about 100,000 to about 3 million.

[0030] It has been found that the silicone resin copolymers as defined herein provide effective substantivity and extended cosmetic wear characteristics when formulated into the topical compositions of the present invention, regardless of whether they form a thick polymeric film over the applied surface area. It is believed that the selection of these particular silicone resin copolymers allows for improved adherence and deposition of the fluid-absorbent solids onto skin, without the need for such heavy polymeric films over the applied areas to keep the solid particulates deposited on and adhered to the intended site of application.

[0031] The silicone resin copolymers for use as an adhesive material

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herein can be prepared by any known or otherwise effective method or chemistry for making such materials, non limiting examples of which include co-hydrolysis or by reacting triorganosilanes or other similar siloxanes with a silica hydrosol. The silicone resin copolymers are generally prepared by mixing and heating together an organosiloxane resin, diorganosiloxane fluid, and catalyst, at a temperature of above about 100 degree C., until the desired adhesive character of the resulting silicone resin copolymer is obtained. Mixing can be facilitated by the use of mutual solvents such as benzene, toluene, xylene, naphtha, mineral spirits or other suitable solvent, which is subsequently removed from the mixture during the heating and mixing process.

[0032] The silicone resin copolymers for use in the topical compositions of the present invention are preferably prepared by heating a mixture of (1) from about 45% to about 75% by weight of the organosiloxane resin as a condensation product of SiO_{2}

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and $\text{R}_{3}\text{SiO}_{2}$ units, wherein each R group is independently selected from methyl, ethyl, propyl or vinyl radicals, and the ratio of SiO_{2} units to $\text{R}_{3}\text{SiO}_{2}$ units in the organosiloxane

resin is from about 0.6 to about 1.0; (2) from about 25% to about 55% by weight of a hydroxyl end-blocked diorganopolysiloxane fluid having a viscosity in the range of from about 100 to about 100,000 cs at 25 degree C., wherein the organic substituents on the diorganosiloxane fluid are independently selected from methyl, ethyl, or vinyl radicals; and (3) from about 0.001% to about 5% by weight of a suitable catalyst, preferably an aliphatic organic amino compound selected from primary amines, secondary amines, tertiary amines, carboxylic acid salts of the above amines and quaternary ammonium salts. The mixture of materials is heated at a temperature above about 100 degree C. until the desired adhesive character of the resulting silicone resin copolymer is obtained.

[0033] Organosiloxane resins suitable for use in preparing

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the silicone resin copolymers for use herein are therefore those that preferably contain $\text{SiO}_{\text{[sub]2}}$ units and $\text{R}_{\text{[sub]3}}(\text{SiO})_{\text{[sub]0.5}}$ units (triorganosilyl) in a molecular ratio of from about 0.6 to about 1.0. Suitable triorganosilyl units for use in such organosiloxane resins include trimethylsilyl, triethylsilyl, methylmethylpropylsilyl, dimethylvinylsilyl, and combinations thereof. Preferred are trimethylsilyl units.

[0034] Diorganosiloxanes fluids suitable for use in preparing the silicone resin copolymers include hydroxyl end blocked diorganosiloxane polymers. The diorganosiloxanes are preferably linear polymers that contain only diorganosiloxane units, but can include small amounts of other materials such as triorganosiloxane units, monorganosiloxane units and $\text{SiO}_{\text{[sub]2}}$ units in minor amounts, typically less than about 1.0% by weight of the diorganosiloxane fluid, provided that the diorganosiloxane fluid remain hydroxyl end blocked to allow for the desired condensation reaction with the organosiloxane resin to form the

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silicone resin copolymer.

[0035] The organic substituents on the diorganosiloxane fluids for use in preparing the silicone resin copolymer can be any one or more of methyl, ethyl or vinyl radicals. Non-limiting examples of suitable diorganosiloxane fluids include ethylmethylpolysiloxane, copolymers of dimethylsiloxane and methylvinylsiloxane units, and mixtures of polymers or copolymers so long as such materials are hydroxyl end blocked. The viscosity of the diorganosiloxane polymer is preferably at least about 100 centistokes, and typically at least about 100,000 centistokes, as measured at 25 degree C., although it is understood that the diorganosiloxane fluid for use in this context can be substituted with a diorganosiloxane solid having a viscosity well beyond 10 million centistokes as measured at 25 degree C.

[0036] The organic amino compound for use as a catalyst in preparing the silicone resin copolymer includes any aliphatic hydrocarbon amine;

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alkanol amine; carboxylic acid salt thereof; and tertiary amine such as trimethylamine, tributylamine, methylidipropylamine, and quaternary ammonium salts. This includes primary amines such as hexylamine, butanolamine, and butylamine; secondary amines such as diethylamine, diethanolamine, ethylamylamine and propylhexylamine; tertiary amines such as trimethylamine, tibutylamine, methylidipropylamine, tirpropanolamine, and methylpropylhexylamine; and quaternary ammonium salts such as tetramethylammonium acetate and methylmethyldibutylammoniumchloride, including quaternary ammonium emulsifying agents sold under various trade names, such as dioctadecyldimethylammonium chloride. In addition, any carboxylic acid salt of the amines, such as diethylamine acetate, butylamine octoate and trimethylamine laurate can be used. Tertiary amines are preferred, especially tertiary aliphatic amines.

[0000] Organosiloxane Resin Adhesives

[0037] The topical compositions of the present invention also include

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adhesive materials that contain an organosiloxane resin, wherein the resin is used in combination with a liquid carrier component comprising a diorganopolysiloxane fluid. This preferred adhesive material can be used alone or in combination with the above-described organosiloxane resin copolymer or other similar adhesive materials.

[0038] The organosiloxane resin adhesive is preferably used in the composition of the present invention such that the weight ratio of the resin to the diorganopolysiloxane fluid is from about 1:5 to about 10:1, more preferably from about 1:1 to about 5:1, even more preferably from about 1:1 to about 3:1, and wherein the total concentration of the organosiloxane resin and the diorganopolysiloxane fluid ranges from about 10% to about 40%, more preferably from about 15% to about 30%, even more preferably from about 20% to about 30%, by weight of the composition.

[0039] The organosiloxane resin adhesive for use in the compositions of the present invention include combinations of R₁[sub]3SiO₁/2 (M

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units), R₁[sub]2SiO₁ (D units), RSiO₁[sub]3/2 (T units), SiO₁[sub]2 (Q units) units in ratios to each other that satisfy the relationship RnSiO₁[sub](4-n)/2 where n is a value between 1.0 and 1.50 and R is a methyl group. Note that a small amount, up to 5%, of silanol or alkoxy functionality may also be present in the resin structure as a result of processing. The organosiloxane resins are solids at about 25 degree C. and have an average molecular weight that generally ranges from about 1,000 to about 10,000 grams/mole.

[0040] Preferred organosiloxane resins for use in the compositions of the present invention are those that contain repeating monofunctional or R₁[sub]3SiO₁/2 (M units) and quadrafunctional or

SiO_{2} (Q units), otherwise known as "MQ" resins as described in U.S. Pat. No. 5,330,747 (Krzysik), which descriptions are incorporated herein by reference. Examples of highly preferred organosiloxane resins are those in which the ratio of "M" to "Q" functional units is about 0.5 and the value of n is 1.5, non-limiting examples of which

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are commercially available from Wacker Silicones Corporation of Adrian Mich. (e.g., Wacker 803 and 804) and the General Electric Company (e.g., G. E. 1170-002).

[0041] Other suitable organosiloxane resins suitable for use herein include functionalized silicone resins, an example of which includes silicone ester waxes comprising moieties of the general formula:

(Chemical formulae 00001. See patent image)

wherein R is an organic radical, R' is a carboxylic acid ester, "a" and "b" are integers independently either 1 or 2 wherein a+b equals 2 or 3.

[0042] The diorganopolysiloxane fluid for use in combination with the organosiloxane resin can be any diorganopolysiloxane fluid that can be

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solubilized within or compatibly dispersed throughout the composition and that is otherwise compatible with the other essential ingredients of the composition. In this context, and for purposes of defining the compositions of the present invention, the diorganosiloxane fluid is considered part of the liquid carrier component of the compositions of the present invention. It is understood, however, that the diorganosiloxane fluid can still be used in the topical compositions even when the adhesive material does not contain an organosiloxane resin, and conversely, that the organosiloxane resin can still be used in the composition without the organosiloxane fluid, but that it is highly preferred that when such resin materials are used, they are used in combination with the diorganosiloxane fluid.

[0043] When used in combination with an organosiloxane resin, the concentration of the diorganopolysiloxane fluid in the topical composition of the present invention depends upon the total resin/fluid concentration and the relative weight ratios of the two, but will

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generally range from about 3% to about 15%, more typically from about 5% to about 10%, even more typically from about 5% to about 8%, by weight of the composition.

[0044] When used in combination with an organosiloxane resin, the

diorganopolysiloxane fluid has a preferred viscosity of from about 100,000 to about 25,000,000 centistokes (cSt) at 25 degree C. and preferably forms a solution with the organosiloxane resin and any other liquid carrier materials in the composition.

[0045] The diorganopolysiloxane fluid for use herein comprises repeating units that correspond to the formula $(R[\sub]2SiO)$, where R is a monovalent hydrocarbon radical containing from 1 to 6 carbon atoms, preferably R is selected from methyl, ethyl, propyl, isopropyl, butyl, isobutyl, t-butyl, amyl, hexyl, vinyl, allyl, cyclohexyl, phenyl, fluoroalkyl and mixtures thereof. The diorganopolysiloxane fluid may contain one or more of these hydrocarbon radicals as substituents on the

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siloxane polymer backbone. The diorganopolysiloxane fluid may be terminated by triorganosilyl groups of the formula $(R'[\sub]3Si)$ where R' is a radical selected from monovalent hydrocarbons containing from 1-6 carbon atoms, hydroxyl groups, alkoxyl groups and mixtures thereof.

[0046] Non limiting examples of preferred diorganopolysiloxane fluids for use herein include poly(dimethylsiloxane) [PDMS] materials such as those available from General Electric as SE30, SE72, SE84, Viscasil(R) 100M, and Baysilone Fluid M 500,000.

Liquid Carrier

[0047] The compositions of the present invention comprise a liquid carrier suitable for topical application to the skin that is also compatible with the essential materials selected for use herein. The carrier is a liquid under ambient conditions or is otherwise in liquid form as formulated within the compositions, and solubilizes the adhesive material in the composition or otherwise helps to maintain the

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adhesive material as solubilized within the composition. The liquid carrier can be aqueous or anhydrous, and includes carrier liquids that are silicone-containing or non silicone-containing, volatile or non-volatile. Anhydrous fluids are preferred.

[0048] The liquid carrier for use in the composition of the present invention preferably includes at least one volatile carrier liquid at a concentration of from about 10% to about 90%, preferably from about 20% to about 80%, more preferably from about 40% to about 60%, by weight of the composition.

[0049] Volatile hydrocarbons suitable for use as a liquid carrier in the topical compositions herein include those hydrocarbons having boiling points in the range of from about 60 degree C. to about 260 degree C., more preferably volatile hydrocarbons having from about C₁ to about C₂₀ chain lengths, more preferably C₁ to C₁₂ isoparaffins. Preferred isoparaffins for use herein include

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isododecane, isohexadecane, isoeicosane, 2,2,4-trimethylpentane,
2,3-dimethylhexane and combinations thereof. Most preferred is
isododecane.

[0050] Volatile silicones suitable for use as a liquid carrier in the topical compositions include those volatile silicones as described in Todd et al., "Volatile Silicone Fluide for Cosmetics", Cosmetics and Toiletries, 91:27-32 (1976), which descriptions are incorporated herein by reference. The volatile silicone liquid can be linear, cyclic or branched, but is preferably a cyclic silicone having from about 3 to about 7, more preferably from about 4 to about 5, silicon atoms. Most preferably are those which conform to the formula:

(Chemical formulae 00002. See patent image)

wherein n is from about 3 to about 7, preferably from about 4 to about 5, most preferably 5. Suitable volatile silicones for use herein include,

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but are not limited to, Cyclomethicone D-5 (commercially available from G. E. Silicones); Dow Corning 344, and Dow Corning 345 (commercially available from Dow Corning Corp.); GE 7207, GE 7158 and Silicone Fluids SF-1202 and SF-1173 (available from General Electric Co.); SWS-03314, SWS-03400, F-222, F-223, F-250, F-251 (available from SWS Silicones Corp.); Volatile Silicones 7158, 7207, 7349 (available from Union Carbide); Masil SF-V (available from Mazer) and combinations thereof. Cyclopentasiloxane is most preferred among the volatile silicone liquids.

[0051] The liquid carrier for use in the compositions of the present invention can also include various other silicone-containing, volatile and non-volatile, diorganopolysiloxanes fluids that comprise repeating units corresponding to the formula $(R[sub]2SiO)$, where R is a monovalent hydrocarbon radical containing from 1 to 6 carbon atoms, preferably R is selected from methyl, ethyl, propyl, isopropyl, butyl, isobutyl, t-butyl, amyl, hexyl, vinyl, allyl, cyclohexyl, phenyl, fluoroalkyl and mixtures thereof. The fluid diorganopolysiloxane polymers

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may contain one or more of these hydrocarbon radicals as substituents on the siloxane polymer backbone. The diorganopolysiloxanes may be terminated by triorganosilyl groups of the formula $(R'[sub]3Si)$ where R' is a radical selected from monovalent hydrocarbons containing from 1-6 carbon atoms, hydroxyl groups, alkoxy groups and mixtures thereof. Polydimethylsiloxanes are preferred, especially linear dimethicones having a viscosity of from about 5 cs to about 500,000 cs, preferably from about 10 cs to about 200,000 cs, as measured at 25 degree C.

[0052] The liquid carrier preferably comprises a residue masking agent. These masking agents are non-volatile liquids that when formulated into the composition help reduce the visible residue on the skin associated with the use of various solid materials, especially the fluid absorbent solids as described hereinafter. The masking agent can be a

silicone-containing material as described herebefore, or an organic or non-silicone containing non-volatile fluid.

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[0053] As stated earlier, many of these silicone fluids are preferably used in combination with those adhesive materials containing an organosiloxane resin.

Fluid Absorbent Solids

[0054] The topical compositions of the present invention comprise fluid-absorbent solids suspended or dispersed throughout the compositions. The fluid-absorbent solids can be any material that remains solid within the composition and provides fluid absorption properties when applied topically to the hair, nails or skin, wherein the requisite fluid absorption properties of the fluid-absorbent solid are determined by, and correlates with, a Moisture Absorption Value of at least 0.5 gram/gram as measured in accordance with the Moisture Absorption Test as defined hereinafter.

[0055] The fluid-absorbent solids for use in the compositions of the present invention include moisture-absorbent materials such as silicas

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(or silicon dioxides), silicates, carbonates, various organic copolymers, and combinations thereof. The silicates are most typically those formed by reaction of a carbonate or silicate with an alkali metal, alkaline earth metal, or transition metal, specific non-limiting examples of which include calcium silicate, amorphous silicas (e.g., precipitated, fumed, and colloidal), calcium carbonate (e.g., chalk), magnesium carbonate, zinc carbonate, and combinations thereof. Non-limiting examples of some suitable silicates and carbonates for use herein are described in Van Nostrand Reinhold's Encyclopedia of Chemistry, 4th edition, pages 155, 169, 556, and 849 (1984), which descriptions are incorporated herein by reference. Absorbent powders are also described in U.S. Pat. No. 6,004,584 (Peterson et al.), which description is incorporated herein by reference.

[0056] Other fluid-absorbent solids suitable for use herein include kaolin, (hydrated aluminum silicates), mica, talc (hydrated magnesium silicates), starch or modified starch, microcrystalline cellulose (e.g.,

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Avicel from FMC Corporation), fluid-absorbent polyethylenes or other functionally similar fluid-absorbent polymer, any other silica-containing or non-silica-containing powder suitable for absorbing moisture or oil from the applied surface of the body.

[0057] The average particle size of the fluid-absorbent solids for use in the compositions is preferably less than about 250 nm, more preferably less than 200 nm. It has been found that the visible residue of such

solid materials is greatly reduced when the average particle size of the solid materials is reduced as noted above. Typical processes used to reduce the particle size sufficiently include wet milling and controlled flow cavitation. In a wet milling process, a slurry is prepared with the particle to be reduced and water or other suitable fluid. The slurry is placed in a stirred media mill chamber with potential dispersants. The dispersants could be ceramic, stainless steel, polymeric coated materials or other and may range in size from 50 microns to 3 millimeters. The tip speed of the rotor arms may range between 5 to 20 meters per second and

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total particle residence time may vary from 30 to 300 seconds. Netzsch is a manufacturer of these types of stirred media mills.

[0058] Among the fluid-absorbent solids for use herein, highly preferred are those that have a Moisture Absorption Value of at least about 0.5, preferably from about 1.0 to about 5.0, even more preferably from about 3.0 to about 5.0, grams of moisture absorption per gram of fluid-absorbent solid as measured in accordance with the Moisture Absorption Test as described herein. These Moisture Absorption Values have been found to correlate with the ability of the topical compositions of the present invention containing such materials to provide moisture, sweat and/or sebum absorption from the applied surface over extended periods of time after topical application.

[0059] The concentration of fluid-absorbent solids in the composition preferably ranges from about 0.1% to about 20%, more preferably from about 0.5% to about 10%, even more preferably from about 2% to about 8%,

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by weight of the composition.

[0060] It has been found, therefore, that the fluid-absorbent solids as described herein can be formulated into the compositions of the present invention to provide long lasting or enduring moisture, sebum and/or sweat absorption from the skin or other applied area after application. It is believed that the adhesive fluid material as described herein provides improved deposition and adherence of the fluid-absorbent solids to the applied surface area, even when such fluid-absorbent solids are formulated into the liquid embodiments of the present invention, to thus provide long lasting or enduring moisture and other fluid-absorption benefits on the applied areas of the body.

Moisture Absorption Test

[0061] The fluid-absorbent solids for use in the compositions of the present invention must have a minimum Moisture Absorption Value of at least about 0.5 gram/gram, wherein the Moisture Absorption Value is

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determined in accordance with the following Moisture Absorption Test. A

powder chamber (Kruss Fiber Cell) and two filter papers (Kruss filter paper, part # FL12PLP) are preweighed on balance and balance tared. One of the filter papers is then placed at the bottom of the powder chamber. The sample of absorbent powder to be tested is then packed into the chamber using a spatula. The mass of powder loaded into the chamber will vary depending upon the density of the powder, but will most typically range from about 0.50 grams to about 3.5 grams of powder packed into the powder chamber. A second filter paper is then placed on top of the packed powder and the screw cap for the chamber is placed on the chamber. The chamber knob is then rotated by hand until the powder is firmly packed and the knob can no longer be rotated manually. The powder chamber is then placed within a Kruss Tensiometer. The Tensiometer glass dish is then filled with distilled water and positioned on the stage device. The Tensiometer is then turned on and the stage is raised to just below the powder chamber so that the powder does not yet contact the distilled water in the dish. The Tensiometer is then balanced and allowed to tare.

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The Tensiometer is then turned off and the stage is raised until the powder chamber is immersed 9 mm in the distilled water. The mass of the powder sample is measured every fifteen seconds until the mass has reached equilibrium and no longer fluctuates drastically.

[0062] The Water Absorption Value is then determined for any given sample by calculating the difference between the mass of the powder chamber at 15 seconds and the mass of the powder chamber at the equilibrium point, divided by the mass of powder initially loaded into the chamber, all in accordance with the equation.

Optional Ingredients

[0063] The topical compositions of the present invention may further comprise other optional ingredients that may modify the physical, chemical, cosmetic or aesthetic characteristics of the compositions or serve as additional "active" components when deposited on the skin. The compositions may also further comprise optional inert ingredients.

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Many such optional ingredients are known for use in personal care compositions, and may also be used in the topical compositions herein, provided that such optional materials are compatible with the essential materials described herein, or do not otherwise unduly impair product performance.

[0064] Such optional ingredients are most typically those materials approved for use in cosmetics and that are described in reference books such as the CTFA Cosmetic Ingredient Handbook, Second Edition, The Cosmetic, Toiletries, and Fragrance Association, Inc. 1988, 1992. Non limiting examples of such optional ingredients include preservatives (e.g., propyl paraben), deodorants, antimicrobials, fragrances, deodorant perfumes, coloring agents or dyes, thickeners, sensates, sunscreens, surfactants or emulsifiers, gellants or other suspending agents, pH modifiers, co-solvents or other additional solvents, emollients, pharmaceutical actives, vitamins, and combinations thereof.

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[0065] Other optional ingredients include silicone elastomer powders and fluids to provide any of a variety of product benefits, including improved product stability, application cosmetics, emolliency, and so forth. The concentration of the silicone elastomer in the composition preferably ranges from about 0.1% to about 20%, more preferably from about 0.5% to about 10%, by weight of the composition. In this context, the weight percentages are based upon the weight of the silicone elastomers material itself, excluding any silicone-containing fluid that typically accompanies such silicone elastomers materials in the formulation process. The silicone elastomers suitable for optional use herein include emulsifying and non-emulsifying silicone elastomers, non-limiting examples of which are described in U.S. Ser. No. 09/613,266 (assigned to The Procter & Gamble Company), which description is incorporated herein by reference.

[0066] Other optional materials include perfumes or fragrances, including deodorant and pro-perfumes, concentrations of which optionally

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typically range from about 0.1% to about 5%, more typically from about 0.5% to about 4%, by weight of the composition. It has been found that the fragrance expression or longevity is extended when such perfumes or fragrances are formulated into the composition. It is believed that the adhesive fluids as described herein help extend perfume expression or longevity within the composition.

[0067] The optional materials include pigments, although the the present invention includes embodiments that are substantially free of pigments. In this context, the term "substantially free" means that such embodiments contain less than about 1.0%, preferably less than 0.1%, most preferably zero percent, by weight of pigments.

[0068] The optional ingredients as described herein shall specifically exclude, however, any essential ingredient or material as otherwise described or defined herein.

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Optional Solid Particulates

[0069] The compositions of the present invention may further comprise solid particulates other than and in addition to the fluid-absorbent solids described herein. These optional solid particulates can be dispersed throughout the composition to allow for deposition onto the hair, nails or skin after topical application of the composition. The optional solid particulate can be any skin active agent or other material known for or otherwise useful in application to and deposition onto the hair, nails or skin. Such solid particulates include materials such as emollients, perfumes, vitamins, sunscreens, pigments or colorants, pharmaceuticals or other skin active agents, or any other solid material that provides a cosmetic, skin active, or other consumer desirable

benefit when applied to and deposited on the hair, nails, or skin.

[0070] The weight ratio of the fluid adhesive material to the optional solid particulates is preferably selected from within the range of from about 5:1 to about 1:20, more preferably from about 4:1 to about 1:15.

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The concentration of the solid particulates in the composition will vary considerably depending upon variables such as the desired product form, the adhesive fluid concentration, the optional solid particulate selected and its intended benefit, and other similar variables.

[0000] Extended Wear

[0071] The topical compositions of the present invention deliver extended wear benefits as characterized by an Average Wear Index as described hereinafter. These index values are determined for any given composition in accordance with the supporting methodologies described hereinafter. All measurements associated with the supporting methodologies are made under ambient condition, unless otherwise specified.

[0072] The topical compositions of the present invention preferably provide an Average Wear Index (AWI) of at least about 25%, more

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preferably at least about 50%, even more preferably from about 75% to 100%, wherein the Average Wear Index is determined by the test methodology described hereinafter. The AWI value is a measure of the amount or percentage of a topically applied product that remains on an applied surface over an extended period of time falling or rubbing off. Thus, higher AWI values correlate with extended wear.

[0073] The Average Wear Index is therefore an indirect measure of the extended wear properties of the topical compositions of the present invention, and is determined by the following Methodology. Equipment and material for use in the test method include a balance (0.1 mg readability), x-ray fluorescence (XRF) cups for film mounting (Chempex Cat. 1095, 45 mm diameter), COFFI film (plasticized collagen, Butcher & Packer, COFFI-11), weights, and cotton fabric (e.g., T-shirt cotton). Product testing is performed in an environmentally controlled room at 75 degree F., 50% relative humidity.

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[0074] The test methodology is initiated by cutting a COFFI film to the appropriate size for mounting with the XRF cups. The XRF cups are prepared by snapping the COFFI film in place, and allowing the cup/film combination to remain in place within the controlled room environment for 24 hours before product sampling.

[0075] Immediately after the 24-hour conditioning period described above, the initial weight of the film-cup combination is weighed. The top of the COFFI film is coated with about 50 mg of the sample composition using a brush to spread the product over the film surface. The weight of the cup-film-coating is weighed and a final sample weight determined. The applied product on the film is allowed to dry for at least about 24 hours. When the coating is dry, it is weighed and a dry sample weight determined. The cup is inverted onto a cotton fabric such that the sample coating is facing downward and is in contact with the fabric. The cotton fabric is placed over a 100% plasticized polyurethane product to add suppleness to the surface of the cotton fabric facing the dried coating.

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A 500 gram weight is placed on the top of the cup to apply pressure to the interface between the dried coating and the cotton fabric.

[0076] The cup is then rotated 360 degrees. The cup-film-coating is then weighed again, and a final product weight determined. The 500 gram weight is then replaced with a 1.5 kg weight before rotating the cup another 100 degrees. The cup-film-coating is then weighed again, and the final weight determined.

[0077] An initial wet sample weight of the coated material (prior to drying) is calculated as the difference between the initial weight of the cup-film and the initial weight of the cup-film-coating prior to drying. An initial dry sample weight is calculated as the difference between the initial weight of the cup-film and the initial weight of the cup-film-coating immediately after drying. The amount of coated product lost after rotation under the 500 gram and 1.5 kg weights is determined by similar calculation. An average of the amount of product lost under

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the two rotations together is determined, and an average value taken, and then converted to a percentage of the originally dried coating removed during rotation. This percentage is then subtracted from 100% to obtain a Wear Index Value.

[0078] The above-described sequence is then repeated for a total of two or more runs for each product sample. An average of all Wear Index Values from the repeated runs is obtained and thus represents the Average Wear Index Value as used herein to characterize the topical compositions of the present invention.

Method of Use

[0079] The topical compositions of the present invention are applied topically to the desired area of the hair, skin or nails in an amount sufficient to provide effective delivery of the desired fluid-absorbent solid to the applied surface. The compositions can be applied to the desired area of the hair, skin or nails and allowed to remain as a

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leave-on product, or the compositions can be rinsed away with water or wiped off of the applied surface. The compositions are preferably used as leave-on applications, i.e., not rinsed or wiped off within 6 hours, preferably with 24 hours, of application.

[0080] The topical composition of the present invention includes leave-on compositions that are applied to the skin to provide sebum and/or sweat absorption, more preferably once daily, especially after showering or bathing.

[0081] The topical compositions of the present invention can also be applied to the body, wherein the composition is preferably not applied to the head or neck, for the purpose of absorbing perspiration wetness and/or sebum from the skin after application, preferably over an extended period of time of at least about 4 hours, preferably from about 6 hours to about 24 hours.

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Method of Manufacture

[0082] The topical compositions of the present invention may be prepared by any known or otherwise effective technique, suitable for making and formulating the desired product form. Specific non-limiting examples of such methods as they are applied to the compositions of the present invention are described in the examples set forth below.

EXAMPLES

[0083] The following examples further describe and demonstrate embodiments within the scope of the present invention. The examples are given solely for the purpose of illustration and are not to be construed as limitations of the present invention, as many variations thereof are possible without departing from the spirit and scope of the invention. All exemplified amounts are active concentrations (not inert carriers, solvents, etc.) by weight of the total composition, unless otherwise specified. To the extent that product concentrations do not add up to 100% for any particular example, the deficit is from excipient materials

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such as inert carriers, solvents, and so forth.

[0084] The topical compositions described below provide topical deposition and adherence of various fluid-absorbent solids onto the skin. The compositions have desirable skin feel and other cosmetic characteristics. Each composition also provides improved fluid-absorbing characteristics (Moisture Absorption Value of the absorbent solid of at least 0.5 gram/gram) and extended wear properties (Average Wear Index of at least 25%).

[0085]

(Table 00001. See patent image)

[0086] Each of the Table 1 compositions are prepared by combining the adhesive material and water in an appropriate container, and mixing the

combination at 400-600 rpm until all of the materials are well dispersed.

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The agitation is then increased as silica and talc are added. The agitation is continued until all materials dispersed in solution.

[0087]

(Table 00002. See patent image)

[0088] Each of the Table 2 compositions are prepared by combining the adhesive and water in an appropriate container, and then mixing the combination at 400-600 rpm until all such materials are well dispersed. The agitation is increased as the other ingredients are added, and is continued until all materials are dispersed in solution.

[0089]

(Table 00003. See patent image)

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[0090] Each of the Table 3 compositions are prepared by combining Pemulen and water in an appropriate container, and then mixing the combination at 400-600 rpm until all materials are well dispersed. The adhesive is added with agitation until well dispersed. The AMP is titrated to a composition pH of 6. The agitation of the mixture is increased as the other materials are added, and the agitation continued until all materials are well dispersed in solution.

[0091]

(Table 00004. See patent image)

[0092] Each of the Table 4 compositions is prepared by combining the adhesive material and water in appropriate container, and then mixing the combination at 400-600 rpm until all materials are well dispersed. The AMP is then added to the combination with mixing. The agitation is then increased as the other ingredients are added. The agitation is maintained

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until all of the materials in the composition are well dispersed in solution.

[0093]

(Table 00005. See patent image)

Each of the Table 5 compositions is prepared by combining Pemulen and water in an appropriate container, and then mixing the combination at 400-600 rpms until all of the materials are well dispersed. The adhesive,

IPM, and silica are then added to the composition with agitation. The aminomethylpropanol is then added to the composition until the pH of the composition reaches 7.5. The agitation is then increased and other materials are each added slowly to the composition. Agitation continues until all of the ingredients are well dispersed.

Exemplary or Independent Claim(s):

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1. A method of absorbing sweat and sebum from the skin, said method comprising the topical application to the skin of a liquid composition comprising:
 - (A) fluid-absorbent solids having a Water Absorption Value of at least about 0.5 gram/gram;
 - (B) an adhesive fluid; and
 - (C) a liquid carrier,wherein the topical composition has a Average Wear Index of at least about 25%.

Non-exemplary or Dependent Claim(s):

2. The method of claim 1, wherein the fluid-absorbent solids have a Water Absorption Value of from about 1.0 to about 5.0.
3. The method of claim 1, wherein the fluid-absorbent solids are selected from the group consisting of silicas, silicates, carbonates, fluid-absorbent polymers, and combinations thereof.
4. The method of claim 1, wherein the fluid-absorbent solids are

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selected from the group consisting of calcium silicates, amorphous silicas, calcium carbonate, magnesium carbonate, zinc carbonate, magnesium silicate, starch, microcrystalline cellulose, and combinations thereof.

5. The method of claim 1, wherein the fluid-absorbent solids represent from about 0.5% to about 20% by weight of the topical liquid composition.
6. The method of claim 1, wherein the topical liquid composition has an Average Wear Index is from about 75% to 100%.
7. The method of claim 1, wherein the adhesive fluid comprises a silicone-containing adhesive.
8. The method of claim 7, wherein the silicone-containing adhesive comprises a silicone resin copolymer.
9. The method of claim 8 wherein the silicone resin copolymer has an average molecular weight of at least about 15,000, and wherein the silicone resin copolymer is a condensation product of an organosiloxane resin and a diorganosiloxane fluid.

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10. The method of claim 9 wherein the silicone resin copolymer has an average molecular weight of from about 100,000 to about 3 million.
11. The method of claim 9 wherein the diorganosiloxane fluid is a

hydroxyl end blocked diorganopolysiloxane having a viscosity of from about 100 to about 100,000 cs at 25 degree C., and wherein the organic substituents on the diorganopolysiloxane fluid are selected from the group consisting of methyl, ethyl, and vinyl radicals.

- 12. The method of claim 11 wherein the silicone resin is as a condensation product of SiO_{2} and $\text{R}_3\text{SiO}_{0.5}$ units; wherein each R group is independently selected from the group consisting of methyl, ethyl, propyl and vinyl radicals; and the molar ratio of SiO_2 units to $\text{R}_3\text{SiO}_{0.5}$ units in the silicone resin is from about 0.6 to about 1.0.
- 13. The method of claim 10 wherein the silicone resin copolymer represents from about 0.05% to about 40% by weight of the composition.
- 14. The method of claim 7, wherein the silicone-containing adhesive

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comprises an organosiloxane resin in combination with a diorganosiloxane fluid.
- 15. The method of claim 14 wherein the weight ratio of the organosiloxane resin to the diorganopolysiloxane fluid is from about 1:5 to about 10:1.
- 16. The method of claim 15 wherein the weight ratio of the organosiloxane resin to the diorganopolysiloxane fluid is from about 1:1 to about 3:1.
- 17. The method of claim 14 wherein concentration of the combination of the organosiloxane resin and the diorganopolysiloxane fluid is from about 10% to about 40% by weight of the composition.
- 18. The method of claim 14 wherein the diorganosiloxane fluid is a polydimethylsiloxane fluid having a viscosity at 25 degree C. of from about 100,000 to about 25,000,000 centistokes (cSt) at 25 degree C.
- 19. The method of claim 1, wherein the liquid carrier comprises a non-volatile residue masking agent.

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- 20. The method of claim 1, wherein the composition is intended solely for rinse-off application.
- 21. The method of claim 1, wherein the composition further comprises from about 0.1% to about 5% by weight of a fragrance.
- 22. The method of claim 1, wherein the composition is substantially free of pigments.
- 23. The method of claim 1, wherein the composition is not intended for topical application to the head or neck.
- 24. The method of claim 1, wherein the fluid-absorbing solids have an average particle size of less than about 250 nm.
- 25. Topical liquid compositions comprising:
 - (A) fluid-absorbent solids having a Water Absorption Value of at least about 0.5 gram/gram;
 - (B) an adhesive fluid; and
 - (C) a liquid carrier;wherein the topical composition has a Average Wear Index of at least about 25%.

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26. A topical liquid composition according to claim 25, wherein the fluid-absorbent solids have a Water Absorption Value of from about 1.0 to about 5.0.
27. A topical liquid composition according to claim 25, wherein the fluid-absorbent solids are selected from the group consisting of silicas, silicates, carbonates, fluid-absorbent polymers, and combinations thereof.
28. A topical liquid composition according to claim 25, wherein the fluid-absorbent solids are selected from the group consisting of calcium silicates, amorphous silicas, calcium carbonate, magnesium carbonate, zinc carbonate, magnesium silicate, starch, microcrystalline cellulose, and combinations thereof.
29. A topical liquid composition according to claim 25, wherein the fluid-absorbent solids represent from about 0.5% to about 20% by weight of the topical liquid composition.
30. A topical liquid composition according to claim 25, wherein the topical liquid composition has an Average Wear Index is from about 75% to 100%.

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31. A topical liquid composition according to claim 25, wherein the adhesive fluid comprises a silicone-containing adhesive.
32. A topical liquid composition according to claim 25, wherein the silicone-containing adhesive comprises a silicone resin copolymer.
33. The liquid composition of claim 32 wherein the silicone resin copolymer has an average molecular weight of at least about 15,000, and wherein the silicone resin copolymer is a condensation product of an organosiloxane resin and a diorganosiloxane fluid.
34. The liquid composition of claim 33 wherein the silicone resin copolymer has an average molecular weight of from about 100,000 to about 3 million.
35. The liquid composition of claim 33 wherein the diorganosiloxane fluid is a hydroxyl end blocked diorganopolysiloxane having a viscosity of from about 100 to about 100,000 cs at 25 degree C., and wherein the organic substituents on the diorganopolysiloxane fluid are selected from the group consisting of methyl, ethyl, and vinyl radicals.

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36. The liquid composition of claim 35 wherein the silicone resin is as a condensation product of SiO_{2} and $\text{R}_{3}\text{SiO}_{0.5}$ units, wherein each R group is independently selected from the group consisting of methyl, ethyl, propyl and vinyl radicals; and the molar ratio of SiO_{2} units to $\text{R}_{3}\text{SiO}_{0.5}$ units in the silicone resin is from about 0.6 to about 1.0.
37. The liquid composition of claim 34 wherein the silicone resin copolymer represents from about 0.05% to about 40% by weight of the liquid composition.
38. The liquid composition of claim 31, wherein the silicone-containing adhesive comprises an organosiloxane resin in combination with a diorganosiloxane fluid.

39. The liquid composition of claim 38 wherein the weight ratio of the organosiloxane resin to the diorganopolysiloxane fluid is from about 1:5 to about 10:1.
40. The liquid composition of claim 39 wherein the weight ratio of the organosiloxane resin to the diorganopolysiloxane fluid is from about 1:1 to about 3:1.

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1:1 to about 3:1.

41. The liquid composition of claim 39 wherein concentration of the combination of the organosiloxane resin and the diorganopolysiloxane fluid is from about 10% to about 40% by weight of the composition.
42. The liquid composition of claim 39 wherein the diorganopolysiloxane fluid is a polydiethylsiloxane fluid having a viscosity at 25 degree C. of from about 100,000 to about 25,000,000 centistokes (cSt) at 25 degree C.
43. A topical liquid composition according to claim 25, wherein the liquid carrier comprises a non-volatile residue masking agent.
44. A topical liquid composition according to claim 25, wherein the composition is intended solely for 25, rinse-off application.
45. A topical liquid composition according to claim 25, wherein the composition further comprises from about 0.1% to about 5% by weight of a fragrance.
46. A topical liquid composition according to claim 25, wherein the composition is substantially free of pigments.

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47. A topical liquid composition according to claim 25, wherein the composition is not intended for topical application to the head or neck.
48. A topical liquid composition according to claim 25, wherein the fluid-absorbing solids have an average particle size of less than about 250 nm.

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Derwent Accession: 2004-614744
Utility
REASSIGNED
Method of making siloxane-based polyamide elastomers
Inventor: Lin, Zuchen, Midland, MI
Nguyen, Kimmai Thi, Midland, MI
Petroff, Lenin James, Bay City, MI
Assignee: Dow Corning Corporation(02), Midland, MI
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Publication Number	Kind	Date	Application Number	Filing Date
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Main Patent US 6838541 A 20050104 US 2003365851 20030212

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DIALOG(R)File 654:US PAT.FULL.
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US Classification on document (Main): 528028
(X-ref): 528015; 528031
Examiner Field of Search (US): 528015; 528026
International Classification (Edition 1): C08G-077/08

Cited US Patents:

Patent Number	Date YYYYMM	Main US Class	Inventor
US 4675372	198706	528026	Policastro
US 5136068	199208	556445	Bahr
US 5500209	199603	424066	Ross
US 5603925	199702	424065	Ross
US 5811487	199809	524862	Schulz, Jr.
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US 5919441	199907	42407808	Mendolia

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US 5981680 199911 528026 Petroff
US 6051216 200004 42407835 Barr
US 6353076 200203 528028 Barr
US 6451295 200209 424065 Cai

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Exemplary or Independent Claim Number(s): 1

Number of US cited patent references: 11

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Assignor: LIN, ZUCHEN, DATE SIGNED: 02/10/2003
NGUYEN, KIMMAI THI, DATE SIGNED: 02/10/2003

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DIALOG(R)File 654:US PAT.FULL.
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PETROFF, LENIN JAMES, DATE SIGNED: 02/10/2003
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Abstract:

Siloxane-based polyamide elastomers can be prepared by heating a reaction mixture containing an olefinic acid and an organic amine to form an organic amide, and reacting the organic amide with a hydride functional polyorganosiloxane in the presence of a hydrosilylation catalyst to form the siloxane-based polyamide elastomer. The hydride functional polyorganosiloxane contains at least one pendant hydrogen. The elastomers are useful additives in personal care products and can be applied to the hair, the skin, or the underarm. They can also be used to

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modify thermoplastic nylons, and for treating woven and non-woven textiles, such as air bags, carpeting, and apparel.

Summary of the Invention:

FIELD OF THE INVENTION

This invention is an improvement and a modification of the method of making siloxane-based polyamides, as generally described in U.S. Pat. No. 5,981,680 (Nov. 9, 1999), referred to hereafter as the '680 patent. The '680 patent is assigned to the same assignee as the present invention. The improvement and modification according to the present invention relates to enablement of the process of the '680 patent for the production of siloxane-based polyamides which are elastomers.

BACKGROUND OF THE INVENTION

Elastomers differ from linear polymers because of crosslinking. The term crosslinking refers to connections between linear polymers. The reactive chemical that creates the connections between linear polymers is called a cross-linker. Many silicone elastomers are made from

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linear silicone polymers that contain reactive sites along their polymer chain. These reactive sites react with the cross-linker to form connections between the linear polymer chains.

The creation of connections, i.e., crosslinks, between the linear polymers converts linear polymers such as polydimethylsiloxane fluids into silicone elastomers. Elastomers have very different physical and chemical properties from linear polymers, and the properties of an elastomer depends very much on the number of crosslinks. Thus, an elastomer with a relatively small number of crosslinks will generally be very soft, and will swell significantly in the presence of a compatible solvent(s). As the number of crosslinks increase, however, the hardness of the elastomer increases, with the result that the elastomer swells to a lesser extent in the presence of solvents. A term often used to describe the number of crosslinks in an elastomer is crosslink density. Crosslink density refers to the number of crosslinks for a given length of the linear polymer.

Unlike linear polymers, it is nearly impossible to determine molecular

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weight for elastomers, because they are in effect one gigantic polymer with no definite beginning or end. Elastomers generally will not flow,

and so one cannot measure a viscosity for such materials. In fact, the term elastomer is derived from the same root word as elastic, a reference to the phenomenon that such materials snap back when a force is applied and then released.

Silicone elastomers can be produced from linear silicone polymers by a wide variety of crosslinking reactions. In the case of a silicone bathtub caulk, for example, the crosslinking reaction occurs between reactive silanol groups ([identical to]SiOH) and acetoxy groups ([identical to]SiOCOCH₃). For each crosslink formed, a molecule of acetic acid is released, which produces the characteristic vinegar smell as the caulk cures. The acetoxy group in such a scenario is called a leaving group, because it is converted to acetic acid which leaves, i.e., evaporates, when the crosslink is formed. While there exist many other different crosslinking schemes to prepare silicone elastomers, those silicone elastomers designed for use in personal

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care applications all typically use the same basic reaction, i.e., hydrosilylation. Hydrosilylation is a reaction in which a vinyl group reacts with a silicon hydride in the presence of a platinum catalyst as shown below: [identical to]SiH+CH₂[subl2][double bond]CH-R[forward arrow][identical to]Si--CH₂[subl2] --CH₂--R

Pt Catalyst

There are many advantages for using hydrosilylation as the crosslinking reaction. It proceeds very rapidly, it requires very small amounts of a platinum catalyst, i.e., typically Karstedt's catalyst, as known in the art, and it does not involve a leaving group. But the most important reason for its popularity is that there are very few limitations in the types of materials that can be used as crosslinkers and polymers in the preparation of silicone elastomers. For example, the SiH functionality can be part of a polyorganosiloxane polymer, a silicone resin, or some other type of silicone or organosilicon composition. Similarly, the R group can be attached to a silicone, a hydrocarbon, or some other type of organic compound.

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This flexibility allows one skilled in the art to graft many and varied types of functional groups into the elastomer.

While siloxane-based polyamide elastomers are generally known in the art, as evidenced by U.S. Pat. No. 4,675,372 (Jun. 23, 1987), referred to hereafter as the '372 patent, it does not employ hydrosilylation as the mechanism of reaction, and the components used to form siloxane-based polyamide elastomers in the '372 patent are not the same as, or the equivalent of, the components according to the present invention. Hence, the elastomers prepared according to the '372 patent would necessarily not be the same as the elastomers prepared herein.

While the '680 patent does refer to a method of preparing crosslinked molecules, it differs from the method herein in that the '680 patent uses a triamine, i.e., a trifunctional amine, in place of an organic diamine, in the preparation of the vinyl functional amide and the hydride functional polyorganosiloxane in the '680 patent is [identical to]SiH endblocked and contains no pendant hydrogen, as in the method of this invention. These differences are significant in that when an organic

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vinyl functional triamide is used, the crosslinker is the hydride functional polyorganosiloxane rather than the organic amide, i.e., see Formula IV in the '680 patent. In the method according to this invention, however, the organic diamide is the crosslinker between molecular chains of the pendant hydrogen containing hydride functional polyorganosiloxane. Hence, elastomers prepared according to the '680 patent would necessarily not be the same as the elastomers prepared herein.

SUMMARY OF THE INVENTION

This invention is directed to a method of making a siloxane-based polyamide elastomer by reacting an organic amide with a hydride functional polyorganosiloxane in the presence of a hydrosilylation catalyst to form the siloxane-based polyamide elastomer. The hydride functional polyorganosiloxane is a polymer or copolymer containing at least one pendant hydrogen.

The organic amine can be a compound such as hexamethylene diamine, ethylene diamine, and decamethylene diamine. The olefinic acid can be a compound such as undecylenic acid, acrylic acid, 3-butenoic acid, and

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4-pentenoic acid.

If desired, a specified amount of a chain stopping agent can be included. Suitable chain stopping agents are described in our copending U.S. patent application Ser. No. 10/145,311, filed on May 15, 2002, and entitled Methods for Making Silicone-Organic Copolymers, which application is assigned to the same assignee as the present invention.

The siloxane-based polyamide elastomer prepared by this method is a useful component of personal care type products, and it can be applied to the hair, skin, or underarm areas of the human body. It can also be used to modify thermoplastic nylons, and for treating woven and non-woven textiles, such as air bags, carpeting, and apparel.

These and other features of the invention will become apparent from a consideration of the detailed description.

What is claimed is:

Exemplary or Independent Claim(s):

1. A method of making a siloxane-based polyamide elastomer comprising

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heating and reacting an organic amide with a hydride functional polyorganosiloxane in the presence of a hydrosilylation catalyst to form the siloxane-based polyamide elastomer; the hydride functional polyorganosiloxane being a polymer or copolymer having a formula selected from the group consisting of
chemical structure - see patent image)
wherein R1 represents (i) an alkyl group containing 1-20 carbon atoms; (ii) an aryl group; (iii) an alkaryl group; or (iv) an aralkyl group; and (v) n and m each have a value of 1-1,000.

Non-exemplary or Dependent Claim(s):

2. A method according to claim 1 in which the organic amide is a diamide prepared from an organic diamine selected from the group consisting of hexamethylene diamine, ethylene diamine, and decamethylene diamine, and an olefinic acid.
3. A method according to claim 2 in which the olefinic acid is a compound selected from the group consisting of undecylenic acid,

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 acrylic acid, 3-butenoic acid, and 4-pentenoic acid.

4. A siloxane-based polyamide elastomer prepared according to the method defined in claim 2.
5. A product containing the siloxane-based polyamide elastomer of claim 4 in which the product is selected from the group consisting of antiperspirants, deodorants, skin creams, skin care lotions, moisturizers, facial treatments, acne removers, wrinkle removers, personal cleansers, facial cleansers, bath oils, perfumes, colognes, sachets, sunscreens, pre-shave lotions, after-shave lotions, shaving soaps, shaving lathers, hair shampoos, hair conditioners, hair sprays, mousse, permanents, depilatories, cuticle coats, make-up, color cosmetics, foundations, blushes, lipsticks, eyeliners, mascara, oil removers, color cosmetic removers, bath powders, body powders, pharmaceuticals, biocides, herbicides, pesticides, biologically active substances, cellulosic substrates, synthetic nonwoven substrates, wet-cleansing wipes tissues, and towels.
6. A method of treating hair, skin, or underarm, comprising applying to

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 hair, skin, or underarm the siloxane-based polyamide elastomer of claim 4.

7. A method of modifying thermoplastic nylons comprising applying to the thermoplastic nylons the siloxane-based polyamide elastomer of claim 4.
8. A method of treating woven and non-woven textiles comprising applying to textiles the siloxane-based polyamide elastomer of claim 4.
9. A method of making a siloxane-based polyamide elastomer comprising heating and reacting (i) an organic amide with (ii) a hydride functional polyorganosiloxane, in the presence of (iii) a solvent, and (iv) a hydrosilylation catalyst, to form the siloxane-based polyamide elastomer; the hydride functional polyorganosiloxane being a polymer or copolymer having a formula selected from the group consisting of
 chemical structure - see patent image)
wherein R1 represents (i) an alkyl group containing 1-20 carbon atoms; (ii) an aryl group; (iii) an alkaryl group; or (iv) an aralkyl

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 group; and (v) n and m each have a value of 1-1,000.

10. A method according to claim 9 in which the organic amide is a diamide prepared from an organic diamine selected from the group consisting of hexamethylene diamine, ethylene diamine, and decamethylene

diamine, and an olefinic acid.

11. A method according to claim 10 in which the olefinic acid is a compound selected from the group consisting of undecylenic acid, acrylic acid, 3-butyric acid, and 4-pentenoic acid.
12. A siloxane-based polyamide elastomer prepared according to the method defined in claim 10.
13. A product containing the siloxane-based polyamide elastomer of claim 12 in which the product is selected from the group consisting of antiperspirants, deodorants, skin creams, care lotions, moisturizers, facial treatments, acne removers, wrinkle removers, personal cleansers, facial cleansers, bath oils, perfumes, colognes, sachets, sunscreens, pre-shave lotions, after-shave lotions, shaving soaps, shaving lathers, hair shampoos, hair conditioners, hair sprays,

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mousse, permanents, depilatories, cuticle coats, make-up, color cosmetics, foundations, blushes, lipsticks, eyeliners, mascara, oil removers, color cosmetic removers, bath powders, body powders, pharmaceuticals, biocides, herbicides, pesticides, biologically active substances, cellulosic substrates, synthetic nonwoven substrates, wet-cleansing wipes, tissues, and towels.

14. A method of treating hair, skin, or underarm, comprising applying to hair, skin, or underarm the siloxane-based polyamide elastomer of claim 12.
15. A method of modifying thermoplastic nylons comprising applying to the thermoplastic nylons the siloxane-based polyamide elastomer of claim 12.
16. A method of treating woven and non-woven textiles comprising applying to the textiles the siloxane-based polyamide elastomer of claim 12.

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Derwent Accession: 2004-697305

Cosmetic compositions containing composite siloxane polymers

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	Publication Number	Kind	Date	Application Number	Filing Date
Main Patent	US 20040161395	A1	20040819	US 2003367301	20030214

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International Classification (Edition 07): A61K-007/025
Secondary: A61K-007/06; A61K-007/11

Fulltext Word Count: 12521
Number of Claims: 20
Exemplary or Independent Claim Number(s): 1,16,20

Abstract:

A cosmetic composition for application to keratinous surfaces for the purpose of coloring, conditioning, or protecting such keratinous surface, comprising a silicone polymer which is the reaction product of a siloxane resin and an diorganosiloxane, in a cosmetically acceptable carrier and method for treating such the keratinous surface for improvement.

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Summary of the Invention:

TECHNICAL FIELD

[0001] The invention is in the field of cosmetic compositions containing certain composite siloxane polymers.

BACKGROUND OF THE INVENTION

[0002] Film forming compositions are widely used in cosmetics. There are many reasons for desiring to form a film on keratinous surfaces. For example, it may be desirable to form a color film on lips with lipsticks or lipglosses; or a film on facial skin with foundation makeups, lotions, or creams; or on nails with nail enamel or nail conditioners.

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Accordingly, the nature and integrity of the film formed on the keratinous surface is critical depending on the end benefit that is to be delivered by the cosmetic composition applied to the keratinous surface. Cosmetics companies are continually interested in improving the function and integrity of cosmetic films formed on the skin.

[0003] In most cases, the reason for forming the film is to provide some aesthetic or functional end result such as retention of moisture on the underlying keratinous surface, or to improve the appearance of skin imperfections, lines, wrinkles, sags, discolorations, and the like; or to improve aesthetics such as gloss, shine, wear, or transfer resistance in cosmetics such as lipsticks or foundations.

[0004] Usually the integrity and functionality of the cosmetic film formed depends on the type and amount of polymers in the cosmetic composition. Some polymers are better at providing certain effects than others, and cosmetics companies will often select and even

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tailor polymers to achieve the desired objectives in the cosmetics they
are formulating.

[0005] Still, there is a need for cosmetic compositions that
exhibit improved properties on the skin in terms of improving the
moisture barrier properties of skin, or improving the appearance of skin
imperfections, lines, wrinkles, discolorations, and the like; or
improving aesthetics such as gloss and transfer resistance of films
formed.

[0006] It is objective of the invention to provide cosmetic
compositions that provide improved films on skin.

[0007] It is another object of the invention to provide cosmetic
compositions that provide films that improve the superficial appearance
of skin or lips, for example, by improving the appearance of skin
imperfections, lines, wrinkles, sags, discolorations, and the like on

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keratinous surfaces.

[0008] It is another object of the invention to provide cosmetic
compositions for improving the aesthetics of cosmetic films formed
on keratinous surfaces, such aesthetics including gloss, shine, transfer
resistance, and wear.

[0009] It is an object to provide a cosmetic compositions
containing a certain type of polymer that provides these desired
benefits.

SUMMARY OF THE INVENTION

[0010] A cosmetic composition for application to keratinous
surfaces for the purpose of coloring, conditioning, or protecting such
keratinous surface, comprising a silicone copolymer which is the reaction
product of a siloxane resin and an diorganosiloxane, in a cosmetically

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acceptable carrier.

[0011] The invention is also directed to a method for improving the
properties of cosmetic films applied to keratinous surfaces
comprising including in said cosmetic composition at least one
silicone copolymer which is the reaction product of a siloxane resin and
a diorganosiloxane.

We claim:

Exemplary or Independent Claim(s):

1. A cosmetic composition for application to keratinous surfaces for the purpose of coloring, conditioning, or protecting such keratinous surface, comprising a silicone polymer which is the reaction product of a siloxane resin and an diorganosiloxane, in a cosmetically acceptable carrier.

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16. A method for improving aesthetics such as gloss, transfer resistance, spreading, and wear of cosmetic compositions applied to lips comprising including in said cosmetic composition at least one silicone polymer which is the reaction product of a siloxane resin and a diorganosiloxane.
20. A transfer resistant lipstick composition comprising, a silicone copolymer which is the reaction product of a diorganosiloxane and a silicone resin, a volatile oil, and pigments.

Non-exemplary or Dependent Claim(s):

2. The composition of claim 1 wherein the siloxane resin is a MQ resin, a T resin, or an MT resin.
3. The composition of claim 2 wherein the siloxane resin is an MQ resin.
4. The composition of claim 1 wherein the diorganosiloxane is polydimethylsiloxane.
5. The composition of claim 4 wherein the diorganosiloxane has hydroxy

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functional terminal groups.

6. The composition of claim 5 wherein the silicone resin has hydroxy functional terminal groups.
7. The composition of claim 6 wherein the hydroxy functional terminal groups of the siloxane resin and the diorganosiloxane react in the presence of ammonia and heat to form the silicone polymer.
8. The composition of claim 1 which is in the form of an emulsion.
9. The composition of claim 8 which is a lotion or cream.
10. The composition of claim 8 which is a foundation makeup.
11. The composition of claim 1 which is an anhydrous pigmented composition.
12. The composition of claim 11 wherein the anhydrous pigmented composition is a lipstick.
13. The composition of claim 12 wherein the lipstick comprises a volatile solvent, pigments, and the polymer.
14. The composition of claim 1 which is a mascara.
15. The composition of claim 14 which is in the emulsion form.

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17. The method of claim 16 wherein the siloxane resin has hydroxy functional terminal groups.
18. The method of claim 17 wherein the diorganosiloxane has hydroxy functional terminal groups.

19. The method of claim 18 wherein the hydroxy terminal functional groups of the siloxane resin and the diorganosiloxane react in the presence of ammonia and heat to form the polymer.

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0005636643

Derwent Accession: 2004-142763

Multi-step cosmetic benefit foundation kit and associated methods

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Main Patent	US 20040086474	A1	20040506	US 2003439555	20030516
Provisional				US 60-389412	20020617

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US Classification on document (Main): 424063000
International Classification (Edition 07): A61K-007/021

Fulltext Word Count: 11664

Number of Claims: 20

Exemplary or Independent Claim Number(s): 1,15

References to Related Applications:

CROSS REFERENCE TO RELATED APPLICATIONS

[0001] This application claims the benefit under 35 USC 119(e) to U.S. Application Serial No. 60/389,412, filed Jun. 17, 2002.

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Abstract:

The present invention relates to a cosmetic kit that is suitable for application as a multi-step facial foundation product wherein the kit comprises: 1) a first composition that comprises: a) a safe and effective amount of a first cosmetic benefit agent; and b) a first cosmetically acceptable carrier; and 2) a second composition that comprises: a) a safe and effective amount of one or more colorants having a refractive index greater than about 2.0; and b) a second cosmetically acceptable carrier; wherein said second composition is topically

applied to facial skin after said first composition.

Summary of the Invention:

FIELD OF INVENTION

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[0002] The present invention relates to a cosmetic kit that is suitable for use as a multi-step facial foundation product. In particular, the cosmetic kit includes at least two compositions that are topically and sequentially applied to facial skin.

BACKGROUND

[0003] It is well known in the skin beauty care field that cosmetic benefit agents may be topically applied to human skin due to incorporation of such agents in a color cosmetic product. There are a number of benefit agents that can be applied to the skin in this manner for varying purposes including, but not limited to, absorbents, anti-acne actives, antiperspirant actives, anti-wrinkle actives, artificial tanning agents, astringents, film forming agents, hydrophilic conditioning agents, hydrophobic conditioning agents, light diffusers, desquamating agents, skin lightening agents, skin soothing/healing agents, skin thickeners, sunscreen actives, vitamin compounds,

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yellowness-reducing particles, redness-reducing particles, and combinations thereof. There is, however, a common problem that arises when any of these actives are incorporated into a color cosmetic. In particular, the amount of the active that can be incorporated into the color cosmetic is limited by a number of parameters, including, but not limited to, solubility, skin feel, and the ability to retain a solid to fluid ratio that yields provides a pleasant cosmetic application experience.

[0004] Applicants have surprisingly found that it is possible to increase the amount of cosmetic benefit agents that are effectively delivered to the skin by utilizing a cosmetic kit that includes a first composition that includes a safe and effective amount of a cosmetic benefit agent and suitable carrier and a second composition that includes one or more high refractive index colorants and a carrier for the colorant. Applicants have also found that the first application can improve the application properties of the pigmented

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second composition.

[0005] Without being limited by theory, Applicants believe that this multi-compositional approach allows for improved efficiency of delivery of active ingredients through separating the skin active benefit functionality from the primary function of imparting color to the skin.

SUMMARY OF THE INVENTION

[0006] The present invention relates to a cosmetic kit suitable for application as a multi-step facial foundation product wherein the kit comprises:

[0007] 1. a first composition that comprises:

[0008] a. a safe and effective amount of a first cosmetic benefit agent; and

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[0009] b. a first cosmetically acceptable carrier; and

[0010] 2. a second composition that comprises:

[0011] a. a safe and effective amount of one or more colorants having a refractive index greater than about 2.0; and

[0012] b. a second cosmetically acceptable carrier;

[0013] wherein said second composition is topically applied to facial skin after said first composition. The invention further relates to methods of using the kit in order to effectively deliver a satisfactory facial foundation product to a user's facial skin.

DETAILED DESCRIPTION OF THE INVENTION

[0014] The present invention relates to a cosmetic kit suitable

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for application as a multi-step facial foundation product. The essential components of the kit are described below. Also included is a nonexclusive description of various optional and preferred components useful in embodiments of the present invention.

[0015] As used herein, "safe and effective amount" means an amount of a compound, component, or composition (as applicable) sufficient to significantly induce a positive effect (e.g., confer a noticeable cosmetic benefit), but low enough to avoid serious side effects, (e.g., undue toxicity or allergic reaction), i.e., to provide a reasonable benefit to risk ratio, within the scope of sound medical judgment.

[0016] As used herein, "cosmetic benefit agent" means a compound, material, and/or active that confers an aesthetic feature to the surface, preferably skin, to which it is applied.

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[0017] The present invention can comprise, consist of, or consist essentially of any of the required or optional ingredients and/or limitations described herein.

[0018] All percentages and ratios are calculated on a weight basis unless otherwise indicated. All percentages are calculated based upon the total composition unless otherwise indicated.

[0019] All molar weights are weight average molecular weights and are given in units of grams per mole.

[0020] All ingredient levels are exclusive of solvents, by-products, or other impurities that may be present in commercially available sources, unless otherwise indicated.

[0021] All measurements made are at ambient room temperature, which is approximately 73 degree F., unless otherwise designated.

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[0022] All documents referred to herein, including patents, patent applications, and printed publications, are hereby incorporated by reference in their entirety in this disclosure.

[0023] Cosmetic Kit

[0024] The cosmetic kit of the present invention includes a first composition that comprises a safe and effective amount of a first cosmetic benefit agent and a first cosmetically-acceptable carrier and a second composition that comprises a safe and effective amount of one or more colorants having a refractive index greater than about 2.0 and a second cosmetically-acceptable carrier wherein the second composition is topically applied to facial skin after the first composition.

[0025] First Composition

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[0026] The first composition of the presently claimed kit is topically applied to the facial skin of a user in order to improve the condition of the skin. One benefit that the application of the first composition provides is to prepare the skin's surface for application of a smooth, natural-appearing, and aesthetically-pleasing color layer such that a consumer-acceptable facial color product is achieved. Yet another benefit that the application of the first composition may provide is delivery to the facial skin of one or more of a first cosmetic benefit agent. The first composition thereby prepares the surface of the skin for the application of the second, high refractive index color-containing composition. It is believed that this surface preparation occurs via deposition and adhesion of the first cosmetic benefit agent to the skin. It is intended, however, that the same or similar cosmetic

benefit agents could be included in the second composition or any other additional compositions that are sequentially applied to the skin and packaged with the kit. Suitable cosmetic agents include, but are not limited to those selected from the group consisting of absorbents,

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anti-acne actives, antiperspirant actives, anti-wrinkle actives, artificial tanning agents, astringents, film forming agents, hydrophilic conditioning agents, hydrophobic conditioning agents, light diffusers, desquamating agents, skin lightening agents, skin soothing/healing agents, skin thickeners, sunscreen actives, vitamin compounds, and combinations thereof.

[0027] In preferred embodiments of the present invention, the first and/or second compositions comprise from about 0.1% to about 60.0%, by weight of the composition, of a cosmetic benefit agent, whether it is in the first or second composition. In fact, even more preferred amounts of the benefit agent in increasing order of preference are from about 0.5% to about 50.0%, 0.5% to about 40.0%, 0.5% to about 35.0%, and 0.5% to about 30.0%, by weight of the composition. Suitable cosmetic benefit agents include but are not limited to those that follow.

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[0028] Absorbents

[0029] The compositions of the present invention may comprise as a cosmetic benefit agent one or more absorbents. These absorbents are useful for achieving the uptake of various fluids that are commonly present on the skin, e.g., perspiration, oil, and/or sebum. Suitable absorbents include, but are not limited to, silicas, silicates, polyacrylates, cross-linked silicones, cross-linked hydrocarbons, activated carbon, starch-based materials (for example cornstarch (topical starch), talc, rice starch, oat starch, tapioca starch, potato starch, legume starches, soy starch, turnip starch), microcrystalline cellulose (for example Avicel(R)), aluminum starch octenyl succinate (sold by National Starch & Chemical Co. as Dry Flo(R) Pure, Dry Flo(R) XT, Dry Flo(R) PC, and/or Dry Flo(R) AF (aluminum free grade)), kaolin, calcium silicate, amorphous silicas, calcium carbonate, magnesium carbonate, or zinc carbonate, and mixtures thereof. Some specific examples of the silicates and carbonates useful in the present invention are more fully

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explained in Van Nostrand Reinhold's Encyclopedia of Chemistry. 4th Ed. pages 155, 169, 556, and 849, (1984).

[0030] Anti-Acne Actives

[0031] Examples of useful anti-acne actives as the cosmetic benefit agents of the present invention include, but are not limited to,

the keratolytics such as salicylic acid (o-hydroxybenzoic acid), derivatives of salicylic acid such as 5-octanoyl salicylic acid, and resorcinol; retinoids such as retinoic acid and its derivatives (e.g., cis and trans); sulfur-containing D and L amino acids and their derivatives and salts, particularly their N-acetyl derivatives, a preferred example of which is N-acetyl-L-cysteine; lipoic acid; antibiotics and antimicrobials such as benzoyl peroxide, octopirox, tetracycline, 2,4,4'-trichloro-2'-hydroxy diphenyl ether, 3,4,4'-trichlorobanilide, azelaic acid and its derivatives, phenoxyethanol, phenoxypropanol, phenoxyisopropanol, ethyl acetate,

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clindamycin and meclacycline; sebastats such as flavonoids; and bile salts such as scymnol sulfate and its derivatives, deoxycholate, and cholate.

[0032] Antiperspirant Actives

[0033] Antiperspirant actives may also be included as the cosmetic benefit agent in the compositions of the present invention. Suitable antiperspirant actives include astringent metallic salts, especially the inorganic and organic salts of aluminum zirconium and zinc, as well as mixtures thereof. Particularly preferred are the aluminum containing and/or zirconium-containing materials or salts, such as aluminum halides, aluminum chlorohydrate, aluminum hydroxyhalides, zirconyl oxyhalides, zirconyl hydroxyhalides, and mixtures thereof.

[0034] Anti-Wrinkle and Anti-Skin Atrophy Actives

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[0035] Examples of anti-wrinkle and anti-skin atrophy actives useful as the cosmetic benefit agents of the present invention include, but are not limited to, retinoic acid and its derivatives (e.g., cis and trans); retinol; retinyl esters; niacinamide, and derivatives thereof; sulfur-containing D and L amino acids and their derivatives and salts, particularly the N-acetyl derivatives, a preferred example of which is N-acetyl-L-cysteine; thiols, e.g., ethane thiol; terpene alcohols (e.g., farnesol); hydroxy acids, phytic acid, lipoic acid; lysophosphatidic acid, alpha-hydroxy acids (e.g., lactic acid and glycolic acid), beta-hydroxy acids (e.g., salicylic acid), and skin peel agents (e.g., phenol and the like).

[0036] Artificial Tanning Actives and Accelerators

[0037] Examples of artificial tanning actives and accelerators useful in the compositions of the present invention include, but are not limited to, dihydroxyacetone, tyrosine, tyrosine esters such as ethyl

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tyrosinate, and phospho-DOPA.

[0038] Astringents

[0039] The compositions of the present invention may include astringents. Astringents are useful for shrinking pores of the skin. Suitable astringents include, but are not limited to, clove oil, fomes officinalis extract, spiraea ulmaria extract, menthol, camphor, eucalyptus oil, eugenol, methyl lactate, witch hazel distillate, aluminum salts, tannins, ethanol, and combinations thereof.

[0040] Film Forming Agents

[0041] Examples of suitable film forming agents useful in the compositions of the present kit include:

[0042] a) sulfopolyester resins, such as AQ sulfopolyester resins,

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such as AQ29D, AQ35S, AQ38D, AQ38S, AQ48S, and AQ55S (available from Eastman Chemicals);

[0043] b) polyvinylacetate/polyvinyl alcohol polymers, such as Vinex resins available from Air Products, including Vinex 2034, Vinex 2144, and Vinex 2019;

[0044] c) acrylic resins, including water dispersible acrylic resins available from National Starch under the trade name "Dermacryl", including Dermacryl LT;

[0045] d) polyvinylpyrrolidones (PVP), including Luviskol K17, K30 and K90 (available from BASF), water soluble copolymers of PVP, including PVP/VA S-630 and W-735 and PVP/dimethylaminoethylmethacrylate Copolymers such as Copolymer 845 and Copolymer 937 available from ISP, as well as other PVP polymers disclosed by E. S. Barabas in the Encyclopedia of Polymer Science and Engineering, 2 Ed., Vol. 17, pp. 198-257;

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[0046] e) high molecular weight silicones such as dimethicone and organic-substituted dimethicones, especially those with viscosities of greater than about 50,000 mPas;

[0047] f) high molecular weight hydrocarbon polymers with viscosities of greater than about 50,000 mPas;

[0048] g) silicone-acrylate copolymers, including VS-70 (3M), SA-70 (3M), KP-545 (Shin-Etsu)

[0049] h) organosiloxanes, including organosiloxane resins, fluid diorganopolysiloxane polymers and silicone ester waxes;

[0050] i) polyurethanes, including Polyderm series of polymers from Alzo, Corp.; and

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[0051] j) hydrophobic acrylate copolymers, including the acrylate/alkylmethacrylate copolymer Lipacryl (Rohm & Haas) or it's emulsified, water dispersible version Allianz OPT (ISP).

[0052] Examples of these polymers and cosmetic compositions containing them are found in PCT publication Nos. WO96/33689, published Oct. 31, 1996; WO97/17058, published May 15, 1997; and U.S. Pat. No. 5,505,937 issued to Castrogiovanni et al. Apr. 9, 1996. Additional film forming polymers suitable for use herein include the water-insoluble polymer materials in aqueous emulsion and water soluble film forming polymers described in PCT publication No. WO98/18431, which published May 7, 1998. Examples of high molecular weight hydrocarbon polymers with viscosities of greater than about 50,000 mPas include polybutene, polybutene terephthalate, polydecene, polycyclopentadiene, and similar linear and branched high molecular weight hydrocarbons.

[0053] Preferred film forming polymers include organosiloxane

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resins comprising combinations of $R_{[sub]3SiO_{[sub]1/2 "M"}}$ units, $R_{[sub]2SiO "D"}$ units, $RSiO_{[sub]3/2 "T"}$ units, $SiO_{[sub]2 "Q"}$ units in ratios to each other that satisfy the relationship $R_{[sub]nSiO_{[sub](4-n)/2}}$ where n is a value between 1.0 and 1.50 and R is a methyl group. Note that a small amount, up to 5%, of silanol or alkoxy functionality may also be present in the resin structure as a result of processing. The organosiloxane resins must be solid at about 25 degree C. and have a molecular weight range of from about 1,000 to about 10,000 grams/mole. The resin is soluble in organic solvents such as toluene, xylene, isoparaffins, and cyclosiloxanes or the volatile carrier, indicating that the resin is not sufficiently crosslinked such that the resin is insoluble in the volatile carrier. Particularly preferred are resins comprising repeating monofunctional or $R_{[sub]3SiO_{[sub]1/2 "M"}}$ units and the quadrafunctional or $SiO_{[sub]2 "Q"}$ units, otherwise known as "MQ" resins as disclosed in U.S. Pat. No. 5,330,747, Krzysik, issued Jul. 19, 1994. In the present invention the ratio of the "M" to "Q" functional units is preferably about 0.7 and the value of n is 1.2.

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Organosiloxane resins such as these are commercially available such as Wacker 803 and 804 available from Wacker Silicones Corporation of Adrian Mich., and G. E. 1170-002 from the General Electric Company.

[0054] Other materials for enhancing wear or transfer resistance include trimethylated silica. Suitable silicas of this type and cosmetic compositions containing them are described in U.S. Pat. No. 5,800,816 issued to Brieva et al.

[0055] Hydrophilic Conditioning Agents

[0056] The cosmetic benefit agents of the present invention can also be one or more hydrophilic conditioning agents. Nonlimiting examples of hydrophilic conditioning agents include those selected from the group consisting of polyhydric alcohols, polypropylene glycols, polyethylene glycols, ureas, pyrrolidone carboxylic acids, ethoxylated and/or

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propoxylated C3-C6 diols and triols, alpha-hydroxy C2-C6 carboxylic acids, ethoxylated and/or propoxylated sugars, polyacrylic acid copolymers, sugars having up to about 12 carbons atoms, sugar alcohols having up to about 12 carbon atoms, and mixtures thereof. Specific examples of useful hydrophilic conditioning agents include materials such as urea; guanidine; glycolic acid and glycolate salts (e.g., ammonium and quaternary alkyl ammonium); lactic acid and lactate salts (e.g., ammonium and quaternary alkyl ammonium); sucrose, fructose, glucose, eruthrose, erythritol, sorbitol, mannitol, glycerol, hexanetriol, propylene glycol, butylene glycol, hexylene glycol, and the like; polyethylene glycols such as PEG-2, PEG-3, PEG-30, PEG-50, polypropylene glycols such as PPG-9, PPG-12, PPG-15, PPG-17, PPG-20, PPG-26, PPG-30, PPG-34; alkoxylated glucose; hyaluronic acid; cationic skin conditioning polymers (e.g., quaternary ammonium polymers such as Polyquaternium polymers); and mixtures thereof. Glycerol, in particular, is a preferred hydrophilic conditioning agent in the articles of the present invention. Also useful are materials such as aloe vera in any of its variety of forms (e.g.,

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aloe vera gel), chitosan and chitosan derivatives, e.g., chitosan lactate, lactamide monoethanolamine; acetamide monoethanolamine; and mixtures thereof. Also useful are propoxylated glycerols as described in propoxylated glycerols described in U.S. Pat. No. 4,976,953, to Orr et al., issued Dec. 11, 1990.

[0057] Hydrophobic Conditioning Agents

[0058] The cosmetic benefit agent may be one or more hydrophobic conditioning agents. Nonlimiting examples of hydrophobic conditioning agents include those selected from the group consisting of mineral oil, petrolatum, lecithin, hydrogenated lecithin, lanolin, lanolin derivatives, C7-C40 branched chain hydrocarbons, C1-C30 alcohol esters of C1-C30 carboxylic acids, C1-C30 alcohol esters of C2-C30 dicarboxylic acids, monoglycerides of C1-C30 carboxylic acids, diglycerides of C1-C30 carboxylic acids, triglycerides of C1-C30 carboxylic acids, ethylene glycol monoesters of C1-C30 carboxylic acids, ethylene glycol diesters of

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C1-C30 carboxylic acids, propylene glycol monoesters of C1-C30 carboxylic acids, propylene glycol diesters of C1-C30 carboxylic acids, C1-C30 carboxylic acid monoesters and polyesters of sugars, polydialkylsiloxanes, polydiarylsiloxanes, polyalkaryl siloxanes,

cyclomethicones having 3 to 9 silicon atoms, vegetable oils, hydrogenated vegetable oils, polypropylene glycol C4-C20 alkyl ethers, di C8-C30 alkyl ethers, and combinations thereof.

[0059] Straight and branched chain hydrocarbons having from about 7 to about 40 carbon atoms are useful herein. Nonlimiting examples of these hydrocarbon materials include dodecane, isododecane, squalane, cholesterol, hydrogenated polyisobutylene, docosane (i.e. a C₂₂ hydrocarbon), hexadecane, isohexadecane (a commercially available hydrocarbon sold as Permethyl(R) 101A by Presperse, South Plainfield, N.J.). C7-C40 isoparaffins, a class of C7-C40 branched hydrocarbons, are useful herein. Polydecene, a branched liquid hydrocarbon, is also useful herein and is commercially available under the tradenames Puresyn 100(R)

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(and Puresyn 3000(R) from Mobile Chemical (Edison, N.J.).

[0060] Also useful are C1-C30 alcohol esters of C1-C30 carboxylic acids and of C2-C30 dicarboxylic acids, including straight and branched chain materials as well as aromatic derivatives. Also useful are esters such as monoglycerides of C1-C30 carboxylic acids, diglycerides of C1-C30 carboxylic acids, triglycerides of C1-C30 carboxylic acids, ethylene glycol monoesters of C1-C30 carboxylic acids, ethylene glycol diesters of C1-C30 carboxylic acids, propylene glycol monoesters of C1-C30 carboxylic acids, and propylene glycol diesters of C1-C30 carboxylic acids. Straight chain, branched chain and aryl carboxylic acids are included herein. Also useful are propoxylated and ethoxylated derivatives of these materials. Nonlimiting examples include diisopropyl sebacate, diisopropyl adipate, isopropyl myristate, isopropyl palmitate, myristyl propionate, ethylene glycol diesterate, 2-ethylhexyl palmitate, isodecyl neopentanoate, di-2-ethylhexyl maleate, cetyl palmitate, myristyl myristate, stearyl stearate, cetyl stearate, behenyl behenrate, dioctyl maleate, dioctyl

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sebacate, diisopropyl adipate, cetyl octanoate, diisopropyl dilinoleate, caprylic/capric triglyceride, PEG-6 caprylic/capric triglyceride, PEG-8 caprylic/capric triglyceride, and combinations thereof.

[0061] Also useful are various C1-C30 monoesters and polyesters of sugars and related materials. These esters are derived from a sugar or polyol moiety and one or more carboxylic acid moieties. Depending on the constituent acid and sugar, these esters can be in either liquid or solid form at room temperature. Examples of liquid esters include: glucose tetraoleate, the glucose tetraesters of soybean oil fatty acids (unsaturated), the mannose tetraesters of mixed soybean oil fatty acids, the galactose tetraesters of oleic acid, the arabinose tetraesters of linoleic acid, xylose tetralinoleate, galactose pentaoleate, sorbitol tetraoleate, the sorbitol hexaesters of unsaturated soybean oil fatty acids, xylitol pentaoleate, sucrose tetraoleate, sucrose pentaoleate, sucrose hexaoleate, sucrose heptoleate, sucrose octaoleate, and mixtures thereof. Examples of solid esters include: sorbitol hexaester in which

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the carboxylic acid ester moieties are palmitoleate and arachidate in a 1:2 molar ratio; the octaester of raffinose in which the carboxylic acid ester moieties are linoleate and behenate in a 1:3 molar ratio; the heptaester of maltose wherein the esterifying carboxylic acid moieties are sunflower seed oil fatty acids and lignocerate in a 3:4 molar ratio; the octaester of sucrose wherein the esterifying carboxylic acid moieties are oleate and behenate in a 2:6 molar ratio; and the octaester of sucrose wherein the esterifying carboxylic acid moieties are laurate, linoleate and behenate in a 1:3:4 molar ratio. A preferred solid material is sucrose polyester in which the degree of esterification is 7-8, and in which the fatty acid moieties are C18 mono- and/or di-unsaturated and behenic, in a molar ratio of unsaturates: behenic of 1:7 to 3:5. A particularly preferred solid sugar polyester is the octaester of sucrose in which there are about 7 behenic fatty acid moieties and about 1 oleic acid moiety in the molecule. Other materials include cottonseed oil or soybean oil fatty acid esters of sucrose. The ester materials are further described in, U.S. Pat. No. 2,831,854, U.S. Pat. No. 4,005,196, to

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Jandacek, issued Jan. 25, 1977; U.S. Pat. No. 4,005,195, to Jandacek, issued Jan. 25, 1977, U.S. Pat. No. 5,306,516, to Letton et al., issued Apr. 26, 1994; U.S. Pat. No. 5,306,515, to Letton et al., issued Apr. 26, 1994; U.S. Pat. No. 5,305,514, to Letton et al., issued Apr. 26, 1994; U.S. Pat. No. 4,797,300, to Jandacek et al., issued Jan. 10, 1989; U.S. Pat. No. 3,963,699, to Rizzi et al., issued Jun. 15, 1976; U.S. Pat. No. 4,518,772, to Volpenhein, issued May 21, 1985; and U.S. Pat. No. 4,517,360, to Volpenhein, issued May 21, 1985.

[0062] Nonvolatile silicones such as polydialkylsiloxanes, polydiarylsiloxanes, and polyalkylsiloxyanes are also useful oils. These silicones are disclosed in U.S. Pat. No. 5,069,897, to Orr, issued Dec. 3, 1991. The polyalkylsiloxanes correspond to the general chemical formula $R_{[sub]3}SiO[R_{[sub]2}SiO]_{[sub]x}SiR_{[sub]3}$ wherein R is an alkyl group (preferably R is methyl or ethyl, more preferably methyl) and x is an integer up to about 500, chosen to achieve the desired molecular weight. Commercially available polyalkylsiloxanes include the

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polydimethylsiloxanes, which are also known as dimethicones, nonlimiting examples of which include the Vicasil(R) series sold by General Electric Company and the Dow Corning(R) 200 series sold by Dow Corning Corporation. Specific examples of polydimethylsiloxanes useful herein include Dow Corning(R) 225 fluid having a viscosity of 10 centistokes and a boiling point greater than 200 degree C., and Dow Corning(R) 200 fluids having viscosities of 50, 350, and 12,500 centistokes, respectively, and boiling points greater than 200 degree C. Also useful are materials such as trimethylsiloxy silicate, which is a polymeric material corresponding to the general chemical formula

$[CH_{[sub]2}SiO_{[sub]1/2}]_{[sub]x}[SiO_{[sub]2}]_y$, wherein x is an integer from about 1 to about 500 and y is an integer from about 1 to about 500. A commercially available trimethylsiloxy silicate is sold as a mixture

with dimethicone as Dow Corning(R) 593 fluid. Also useful herein are dimethiconols, which are hydroxy terminated dimethyl silicones. These materials can be represented by the general chemical formulas R₁[sub]3SiO[R₁2SiO][sub]xSiR₁2OH and

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HOR₁[sub]2SiO[R₁2SiO][sub]xSiR₁2OH wherein R is an alkyl group (preferably R is methyl or ethyl, more preferably methyl) and x is an integer up to about 500, chosen to achieve the desired molecular weight. Commercially available dimethiconols are typically sold as mixtures with dimethicone or cyclomethicone (e.g. Dow Corning(R) 1401, 1402, and 1403 fluids). Also useful herein are polyalkylaryl siloxanes, with polymethylphenyl siloxanes having viscosities from about 15 to about 65 centistokes at 25 degree C. being preferred. These materials are available, for example, as SF 1075 methylphenyl fluid (sold by General Electric Company) and 556 Cosmetic Grade phenyl trimethicone fluid (sold by Dow Corning Corporation). Alkylated silicones such as methyldecyt silicone and methyloctyl silicone are useful herein and are commercially available from General Electric Company. Alkyl modified siloxanes are useful as well. They include alkyl methicones and alkyl dimethicones wherein the alkyl chain contains 10 to 50 carbons. Such siloxanes are commercially available under the tradenames ABIL WAX 9810 (C₁[sub]24-C₁[sub]28 alkyl methicone) (sold by Goldschmidt) and SF1632

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(cetearyl methicone) (sold by General Electric Company).

Cyclomethicone/dimethicone copolyol mixtures are also particularly useful as formulation aid/conditioning agents. A suitable mixture is sold under the tradename DC 3225Q(R).

[0063] Vegetable oils and hydrogenated vegetable oils are also useful herein. Examples of vegetable oils and hydrogenated vegetable oils include safflower oil, castor oil, coconut oil, cottonseed oil, menhaden oil, palm kernel oil, palm oil, peanut oil, soybean oil, rapeseed oil, linseed oil, rice bran oil, pine oil, sesame oil, sunflower seed oil, hydrogenated safflower oil, hydrogenated castor oil, hydrogenated coconut oil, hydrogenated cottonseed oil, hydrogenated menhaden oil, hydrogenated palm kernel oil, hydrogenated palm oil, hydrogenated peanut oil, hydrogenated soybean oil, hydrogenated rapeseed oil, hydrogenated linseed oil, hydrogenated rice bran oil, hydrogenated sesame oil, hydrogenated sunflower seed oil, and mixtures thereof.

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[0064] Also useful are C4-C20 alkyl ethers of polypropylene glycols, Cl-C20 carboxylic acid esters of polypropylene glycols, and di-C8-C30 alkyl ethers. Nonlimiting examples of these materials include PPG-14 butyl ether, PPG-15 stearyl ether, dioctyl ether, dodecyl octyl ether, and mixtures thereof.

[0065] Hydrophobic chelating agents are also useful herein as

hydrophobic conditioning agents. Suitable agents are described in U.S. Pat. No. 4,387,244, issued to Scanlon et al. on Jun. 7, 1983, and copending U.S. patent application Ser. Nos. 09/258,747 and 09/259,485, filed in the names of Schwartz et al. on Feb. 26, 1999.

[0066] Preferred hydrophobic conditioning agents are selected from the group consisting of mineral oil, petrolatum, lecithin, hydrogenated lecithin, lanolin, lanolin derivatives, C7-C40 branched chain hydrocarbons, C1-C30 alcohol esters of C1-C30 carboxylic acids, C1-C30 alcohol esters of C2-C30 dicarboxylic acids, monoglycerides of C1-C30

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carboxylic acids, diglycerides of C1-C30 carboxylic acids, triglycerides of C1-C30 carboxylic acids, ethylene glycol monoesters of C1-C30 carboxylic acids, ethylene glycol diesters of C1-C30 carboxylic acids, propylene glycol monoesters of C1-C30 carboxylic acids, propylene glycol diesters of C1-C30 carboxylic acids, C1-C30 carboxylic acid monoesters and polyesters of sugars, polydialkylsiloxanes, polydiarylsiloxanes, polyalkylarylsiloxanes, cyclomethicones having 3 to 9 silicon atoms, vegetable oils, hydrogenated vegetable oils, polypropylene glycol C4-C20 alkyl ethers, di C8-C30 alkyl ethers, and combinations thereof.

[0067] Light Diffusers

[0068] The compositions of the claimed kit may include as the cosmetic benefit agent a light diffuser. Light diffusers are useful for improving skin appearance by minimizing the appearance of texture such as pores and fine lines. Suitable light diffusers for inclusion into the compositions of the present kit include, but are not limited to

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silica, nylon, polyethylene, polymethyl methacrylate, polystyrene, methylsiloxane copolymer, polytetrafluoroethylene copolymer, boron nitride, silicone resin powders, silicone rubber powders, ethylene acrylate copolymers, mica, titanium dioxide, zinc oxide, and combinations thereof.

[0069] Desquamating Agents

[0070] The compositions of the present invention may include one or more desquamating agents. Such agents are useful for improving the turnover of skin in such a manner that the skin appears rejuvenated and younger looking. For example, the desquamation actives tend to improve the texture of the skin (e.g., smoothness). One desquamation system that is suitable for use herein contains sulphydryl compounds and zwitterionic surfactants and is described in U.S. Pat. No. 5,681,852, to Bissett. Another desquamation system that is suitable for use herein contains salicylic acid and zwitterionic surfactants and is described in U.S. Pat.

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No. 5,652,228 to Bisset. Zwitterionic surfactants such as described in these applications are also useful as desquamatory agents herein, with cetyl betaine being particularly preferred.

[0071] Skin Lightening Agents

[0072] Another suitable cosmetic benefit agent is a skin lightening agent. Suitable skin lightening agents include those known in the art, including kojic acid, arbutin, deoxyarbutin, ascorbic acid and derivatives thereof, e.g., magnesium ascorbyl phosphate or sodium ascorbyl phosphate or other salts of ascorbyl phosphate.

[0073] Skin Soothing and Skin Healing Actives

[0074] A safe and effective amount of a skin soothing or skin healing active may be added to the present composition, preferably, from about 0.1% to about 30%, more preferably from about 0.5% to about 20%, still

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more preferably from about 0.5% to about 10%, by weight of the composition formed. Skin soothing or skin healing actives suitable for use herein include panthenoic acid derivatives (including panthenol, dexpanthenol, ethyl panthenol), aloe vera, allantoin, bisabolol, and dipotassium glycyrrhizinate.

[0075] Sunscreen Actives

[0076] Also useful herein as cosmetic benefit agents are sunscreen actives. A wide variety of sunscreen actives are described in U.S. Pat. No. 5,087,445, to Haffey et al., issued Feb. 11, 1992; U.S. Pat. No. 5,073,372, to Turner et al., issued Dec. 17, 1991; U.S. Pat. No. 5,073,371, to Turner et al. issued Dec. 17, 1991; and Sagarin, et al., at Chapter VIII, pages 189 et seq., of Cosmetics Science and Technology. Nonlimiting examples of sunscreens which are useful in the compositions of the present invention are those selected from the group consisting of 2-ethylhexyl p-methoxycinnamate, 2-ethylhexyl

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N,N-dimethyl-p-aminobenzoate, p-aminobenzoic acid, 2-phenylbenzimidazole-5-sulfonic acid, octocrylene, oxybenzone, homomenthyl salicylate, octyl salicylate, 4,4'-methoxy-t-butylidenebenzoylmethane, 4-isopropyl dibenzoylmethane, 3-benzylidene camphor, 3-(4-methylbenzylidene) camphor, titanium dioxide, zinc oxide, silica, iron oxide, and mixtures thereof. Still other useful sunscreens are those disclosed in U.S. Pat. No. 4,937,370, to Sabatelli, issued Jun. 26, 1990; and U.S. Pat. No. 4,999,186, to Sabatelli et al., issued Mar. 12, 1991. Especially preferred examples of these sunscreens include those selected from the group consisting of 4-N,N-(2-ethylhexyl)methylaminobenzoic acid ester of 2,4-dihydroxybenzophenone, 4-N,N-(2-ethylhexyl)methylaminobenzoic acid ester with 4-hydroxybenzoylmethane, 4-N,N-(2-ethylhexyl)-methylaminobenzoic acid ester of 2-hydroxy-4-(2-hydroxyethoxy)benzophenone, 4-N,N-(2-ethylhexyl)-methylaminobenzoic acid ester of

4-(2-hydroxyethoxy)dibenzoylmethane, and mixtures thereof. Exact amounts

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of sunscreens that can be employed will vary depending upon the sunscreen chosen and the desired Sun Protection Factor (SPF) to be achieved. SPF is a commonly used measure of photoprotection of a sunscreen against erythema.

[0077] Vitamin Compounds

[0078] The present compositions may comprise vitamin compounds, precursors, and derivatives thereof as the cosmetic benefit agents. These vitamin compounds may be in either natural or synthetic form. Suitable vitamin compounds include, but are not limited to, Vitamin A (e.g., beta carotene, retinoic acid, retinol, retinoids, retinyl palmitate, retinyl propionate, etc.), Vitamin B (e.g., niacin, niacinamide, riboflavin, pantothenic acid, etc.), Vitamin C (e.g., ascorbic acid, etc.), Vitamin D (e.g., ergosterol, ergocalciferol, cholecalciferol, etc.), and Vitamin E (e.g., tocopherol).

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[0079] Enzymes

[0080] The cosmetic benefit agents of the present invention may be one or more enzymes. Preferably, such enzymes are dermatologically acceptable. Suitable enzymes include, but are not limited to, keratinase, protease, amylase, subtilisin, other peptides and proteins, etc.

[0081] Peptides, including but not limited to, di-, tri-, tetra-, and pentapeptides and derivatives thereof, may be included as the cosmetic benefit agents of the present invention in amounts that are safe and effective. As used herein, "peptides" refers to both the naturally occurring peptides and synthesized peptides. Also useful herein are naturally occurring and commercially available compositions that contain peptides.

[0082] Chelators

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[0083] The cosmetic benefit agents in the compositions of the present kit may be chelators. As used herein, "chelator" or "chelating agent" means an active agent capable of removing a metal ion from a system by forming a complex so that the metal ion cannot readily participate in or catalyze chemical reactions. The inclusion of a chelating agent is especially useful for providing protection against UV radiation that can contribute to excessive scaling or skin texture changes and against other environmental agents, which can cause skin damage.

[0084] Exemplary chelators that are useful herein are disclosed in

U.S. Pat. No. 5,487,884, issued Jan. 30, 1996 to Bissett et al.; International Publication No. 91/16035, Bush et al., published Oct. 31, 1995; and International Publication No. 91/16034, Bush et al., published Oct. 31, 1995. Preferred chelators useful in compositions of the subject invention are furildioxime, furildioxime derivatives, furilmonoxime, furilmonoxime derivatives, and combinations thereof.

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[0085] Flavonoids

[0086] The cosmetic benefit agents of the present invention may also be a flavonoid. Flavonoids are broadly disclosed in U.S. Pat. Nos. 5,686,082 and 5,686,367.

[0087] Sterols

[0088] The cosmetic benefit agents of the present invention may also be a safe and effective amount of one or more sterol compounds. Examples of useful sterol compounds include sitosterol, stigmasterol, campesterol, brassicasterol, lanosterol, 7-dehydrocholesterol, and mixtures thereof. These can be synthetic in origin or from natural sources, e.g., blends extracted from plant sources (e.g., phytosterols).

[0089] Second Composition

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[0090] The second composition of the kit of the present invention comprises a safe and effective amount of one or more colorants having a refractive index greater than about 2.0 and a cosmetically-acceptable carrier. The primary purpose of this second composition is to deliver the desirable shade or color and that the user is seeking by his/her use of the facial foundation, as well as even out skin tone by covering or hiding tonal imperfections. This second composition may, however, also be instrumental in providing deposition and substantivity of additional cosmetic benefit agents to the skin's surface. For instance, in certain embodiments the second composition may contain the same or similar cosmetic benefit agents as are present in the first composition such that the amount delivered and subsequently deposited to the skin is increased due to this multi-step approach. In particular, in order to achieve a long-wearing product, film forming agents may be incorporated into both the first and second compositions as could other cosmetic benefit agents that would work synergistically together to provide an improved benefit.

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[0091] The colorants of the second composition exhibit a refractive index of greater than about 2.0. Applicants have found that colorants having higher refractive indices are particularly useful in the second compositions since the primary function of the said second composition is to impart color and tonal coverage of the underlying skin. With regard to

the colorants useful in the second composition of the present invention, a wide variety of colorants are suitable for use herein. For instance, suitable colorants include, but are not limited to, D&C Yellow No. 7, D&C Red No. 36, FD&C Red No. 4, D&C Orange No. 4, D&C Red No. 6, D&C Red No. 34, FD&C Yellow No. 6, D&C Red No. 33, FD&C Yellow No. 5, D&C Brown No. 1, D&C Red No. 17, FD&C Green No. 3, D&C Blue No. 4, D&C Yellow No. 8, D&C Orange No. 5, D&C Red No. 22, D&C Red No. 21, D&C Red No. 28, D&C Orange No. 1, D&C Yellow No. 10, D&C Violet No. 2, Ext. D&C Violet No. 2, D&C Green No. 6, D&C Green No. 5, D&C Red No. 30, D&C Green No. 8, D&C Red No. 7, FD&C Blue No. 1, D&C Yellow No. 7, D&C Red No. 27, D&C Orange No. 10, D&C Red No. 31, FD&C Red No. 40, D&C Yellow No. 11, Annatto extract, [small beta, Greek] carotene, guanine, carmine, aluminum powder,

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ultramarines, bismuth oxychloride, chromium oxide green, chromium hydroxide green, iron oxides, ferric ferrocyanide, manganese violet, titanium dioxide, titanated mica (i.e., mica coated with titanium dioxide), iron oxide titanated mica, zinc oxide, caramel coloring, mica, fer-ic ammonium ferrocyanide, dihydroxyacetone, guiazulene, pyrophyllite, bronze powder, copper powder, aluminum stearate, calcium stearate, lactofavin, magnesium stearate, zinc stearate, capsanthin/capsorubin, bentonite, barium sulfate, calcium carbonate, calcium sulfate, carbon black, magnesium carbonate, magnesium silicate, colored silica, silica (including spherical silica, hydrated silica and silica beads), CI 10020, CI 11680, CI 15630, CI 15865, CI 16185, CI 16255, CI 16255, CI 45430, CI 69825, CI 73000, CI 73015, CI 74160, CI 75100, CI 77002, CI 77346, CI 77480, nylon powder, polyethylene powder, ethylene acrylates copolymer powder, methacrylate powder, polystyrene powder, silk powder, crystalline cellulose, starch, bismuth oxychloride, guanine, kaolin, chalk, diatomaceous earth, microsponges, boron nitride and the like. Additionally, lakes or composites of these colorants may

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also be used. Additional colorants, pigments, and powders useful herein are described in U.S. Pat. No. 5,505,937 issued to Castrogiovanni et al. Apr. 9, 1996.

[0092] In preferred embodiments of the present invention, the second composition comprises from about 0.5% to about 80.0%, by weight of the composition, of a high refractive index colorant. In fact, even more preferred amounts of the colorant in the second composition, in increasing order of preference are from about 0.5% to about 50.0%, 0.5% to about 40.0%, 1.0% to about 35.0%, and 1.5% to about 30.0%, by weight of the composition.

[0093] Cosmetically-Acceptable Carriers

[0094] The first and second compositions of the present invention each comprise a cosmetically-acceptable carrier for the first cosmetic benefit agent and pigment, respectively. Suitable carriers

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are well known in the art and are selected based on the end use application. For example, carriers of the present invention include, but are not limited to, those suitable for application to skin. Preferably, the carriers of the present invention are suitable for application to skin (e.g., sunscreens, creams, milks, lotions, masks, serums, etc.). Such carriers are well-known to one of ordinary skill in the art, and can include one or more compatible liquid or solid filler diluents or vehicles which are suitable for application to skin. The exact amount of carrier will depend upon the level of the first cosmetic benefit agent in the first composition and the level of the pigment in the second composition as well as any optional ingredients that are included in each of the compositions that one of ordinary skill in the art would classify as distinct from the carrier (e.g., other active components). Each of the first and second compositions of the present invention preferably comprises from about 5% to about 99%, more preferably from about 10% to about 98%, and most preferably, from about 10% to about 97%, by weight of the composition, of a carrier.

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[0095] The carrier and compositions herein can be formulated in a number of ways, including but not limited to emulsions. For example, suitable emulsions include oil-in-water, water-in-oil, water-in-silicone, silicone-in-water, water-in-oil-in-water, oil-in-water-in-oil, and oil-in-water-in-silicone emulsions. Preferred first compositions comprise an oil-in-water emulsion while preferred second compositions comprise a water-in-silicone emulsion.

[0096] The compositions of the present invention can be formulated into a wide variety of product types, including powders, creams, waxes, pastes, lotions, milks, mousses, gels, oils, tonics, and sprays. Preferred compositions are formulated into color cosmetic products, even more preferably facial foundations, and even more preferably, facial foundations that are in the form of liquids, lotions, creams, gels, sprays, and combinations thereof. In certain embodiments, any one of the compositions of the present kit may be electrostatically applied to the skin as described in co-pending application Ser. Nos. 09/628,631,

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09/629,734, 09/629,765, 09/628,630, all filed on Jul. 31, 2000 and claiming priority to May 31, 2000. Any additional components required to formulate such products vary with product type and can be routinely chosen by one skilled in the art.

[0097] Optional Ingredients

[0098] The compositions of the present invention may contain a variety of other components such as are conventionally used in a given product type provided that they do not unacceptably alter the benefits of the invention. These optional components should be suitable for application to mammalian skin, that is, when incorporated into the compositions they are suitable for use in contact with human skin without undue toxicity, incompatibility, instability, allergic response, and the like, within the

scope of sound medical or formulator's judgment. The CTFA Cosmetic Ingredient Handbook, Second Edition (1992) describes a wide variety of nonlimiting cosmetic and pharmaceutical ingredients commonly used

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in the skin care industry, which are suitable for use in the compositions of the present invention. Suitable optional ingredients include:

[0099] Oil-soluble Polymeric Gelling Agents

[0100] The compositions of the present invention may optionally comprise one or more polymeric materials that are oil-soluble and form a gel with hydrophobic materials (e.g., oils) that are contained in the compositions. Such polymers are beneficial for structuring these materials resulting in flexible gels with improved stability and shear-resistance.

[0101] Particularly suitable are at least partially cross-linked oil-soluble polymeric materials with a softening point <160 degree C. Suitable materials come from the chemical groups of PE (polyethylenes), PVA (polyvinyl alcohols) and derivatives, PVP (polyvinylpyrrolidones) and derivatives, PVP/Alkene Copolymers, PVP/VA copolymers, PVM/MA (methyl

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vinyl ether/maleic anhydride) copolymers and their esters and ethers, particularly poly (vinyl ether-co-maleic anhydride) copolymers, ethylene/VA copolymers, acrylates/alkyl methacrylate, styrene/isoprene, styrene/ethylene/butylene, styrene/ethylene/propylene, styrene/ethylene/butylene/styrene, styrene/butadiene copolymers, bentonite clays, hectorite clays, organic waxes and silicone waxes. Suitable materials are available e.g. from Dupont (ELVAX(R) types), BASF (LUVISKOL(R) types), Shell (KRATON(R) polymers), ISP (PVP, GANTREZ(R), GANEX(R) and ALLIANZ OPT(R) types) and Rohm & Haas (LIPACRYL(R)).

[0102] Hydrophilic Gelling Agent

[0103] The compositions of the invention may optionally contain a hydrophilic gelling agent at a level preferably from about 0.01% to about 10%, more preferably from about 0.02% to about 2%, and especially from about 0.02% to about 0.5%. The gelling agent preferably has a viscosity (1% aqueous solution, 20 degree C., Brookfield RVT) of at least about

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4000 mPa s, more preferably at least about 10,000 mPa s and especially at least 50,000 mPa s.

[0104] Suitable hydrophilic gelling agents can generally be described as water-soluble or colloidally water-soluble polymers, and include cellulose ethers (e.g. hydroxyethyl cellulose, methyl cellulose, hydroxypropylmethyl cellulose), bentonite clays, hectorite clays,

polyvinylpyrrolidone, polyvinylalcohol, polyquaternium-10, guar gum, hydroxypropyl guar gum and xanthan gum.

[0105] Among suitable hydrophilic gelling agents are acrylic acid/ethyl acrylate copolymers and the carboxyvinyl polymers sold by the B. F. Goodrich Company under the trademark of Carbopol resins. These resins consist essentially of a colloidally water-soluble polyalkenyl polyether crosslinked polymer of acrylic acid crosslinked with from 0.75% to 2.00% of a crosslinking agent such as for example polyallyl sucrose or polyallyl pentaerythritol. Examples include Carbopol 934, Carbopol 940,

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Carbopol 950, Carbopol 980, Carbopol 951 and Carbopol 981. Carbopol 934 is a water-soluble polymer of acrylic acid crosslinked with about 1% of a polyallyl ether of sucrose having an average of about 5.8 allyl groups for each sucrose molecule. Also suitable for use herein are hydrophobically-modified cross-linked polymers of acrylic acid having amphipathic properties available under the Trade Name Carbopol 1382, Carbopol 1342 and Pemulen TR-1 (CTFA Designation: Acrylates/10-30 Alkyl Acrylate Crosspolymer). A combination of the polyalkenyl polyether cross-linked acrylic acid polymer and the hydrophobically modified cross-linked acrylic acid polymer is also suitable for use herein. Other suitable gelling agents suitable for use herein are oleogels such as trihydroxystearin and aluminium magnesium hydroxy stearate. The gelling agents herein are particularly valuable for providing excellent stability characteristics over both normal and elevated temperatures.

[0106] Neutralizing agents suitable for use in neutralizing acidic group containing hydrophilic gelling agents herein include sodium

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hydroxide, potassium hydroxide, ammonium hydroxide, monoethanolamine, diethanolamine and triethanolamine.

[0107] Emulsifiers/Surfactants

[0108] Emulsifiers (also known as "surfactants") can also be included into the compositions of the present invention, particularly when the compositions include emulsions.

[0109] A wide variety of emulsifiers are useful herein and include those selected from the group consisting of anionic emulsifiers, nonionic emulsifiers, cationic emulsifiers, amphoteric emulsifiers, and combinations thereof.

[0110] Preferred emulsifiers are selected from the group consisting of anionic emulsifiers selected from the group consisting of ammonium lauroyl sarcosinate, sodium trideceth sulfate, sodium lauroyl

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sarcosinate, ammonium laureth sulfate, sodium laureth sulfate, ammonium lauryl sulfate, sodium lauryl sulfate, ammonium cocoyl isethionate, sodium cocoyl isethionate, sodium lauroyl isethionate, sodium cetyl sulfate, sodium monolauryl phosphates, ethoxylated monoalkyl phosphates, sodium cocoglyceryl ether sulfonate, sodium C₁₂-C₂₂ soap, and combinations thereof; nonionic emulsifiers selected from the group consisting of lauramine oxide, cocoamine oxide, decyl polyglucose, lauryl polyglucose, sucrose cocoate, C₁₂-C₁₄ glucosamides, sucrose laurate, and combinations thereof; cationic emulsifiers selected from the group consisting of fatty amines, di-fatty quaternary amines, tri-fatty quaternary amines, imidazolinium quaternary amines, and combinations thereof; amphoteric emulsifiers selected from the group consisting of disodium lauroamphodiacetate, sodium lauroamphoacetate, cetyl dimethyl betaine, cocoamidopropyl betaine, cocoamidopropyl hydroxy sultaine, and combinations thereof.

[0111] Crosslinked Silicone Polymers

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[0112] The composition of the present invention may optionally include a polymer that is nonlinear in nature. Suitable polymers for inclusion in the claimed compositions include, but are not limited to polysiloxanes that are crosslinked organopolysiloxane polymer gel networks. For instance, particularly well-suited crosslinked organopolysiloxane polymer gel networks are formed from polymerization of an epoxy functional organosiloxane in the presence of an acid catalyst. The organopolysiloxane polymer is a crosslinked organopolysiloxane polymer gel network selected from non-emulsifying polymer gel networks, emulsifying polymer gel networks, and combinations thereof. Specific examples of such are described in U.S. Pat. No. 6,531,540 B1, U.S. Pat. No. 6,538,061 B2, U.S. Pat. No. 6,444,745 B1, U.S. Pat. No. 6,346,583 B1, U.S. Pat. No. 5,654,362, U.S. Pat. No. 5,811,487, U.S. Pat. No. 5,880,210, U.S. Pat. No. 5,889,108, U.S. Pat. No. 5,929,164, U.S. Pat. No. 5,948,855, U.S. Pat. No. 5,969,035, U.S. Pat. No. 5,977,280, U.S. Pat. No. 6,080,394, U.S. Pat. No. 6,168,782, U.S. Pat. No. 6,177,071, U.S. Pat. No. 6,200,581, U.S. Pat. No. 6,207,717, U.S. Pat. No.

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6,221,927, U.S. Pat. No. 6,221,979, U.S. Pat. No. 6,238,657, and U.S. Pat. No. 4,987,169.

[0113] Suitable organopolysiloxane polymer network powders include vinyl dimethicone/methicone silsesquioxane crosspolymers like Shin-Etsu's KSP-100, KSP-101, KSP-102, KSP-103, KSP-104, KSP-105, hybrid silicone powders that contain a fluoroalkyl group like Shin-Etsu's KSP-200, and hybrid silicone powders that contain a phenyl group such as Shin-Etsu's KSP-300; and Dow Corning's DC 9506.

[0114] Preferred organopolysiloxane compositions are dimethicone/vinyl dimethicone crosspolymers. Such dimethicone/vinyl dimethicone crosspolymers are supplied by a variety of suppliers including Dow Corning (DC 9040 and DC 9041), General Electric (Velviesil 125), General Electric (SFE 839), Shin Etsu (KSG-15, 16, 18 [dimethicone/phenyl vinyl dimethicone crosspolymer] and KSG-21 [dimethicone copolyol

crosspolymer]], Grant Industries (Gransil(TM) line of materials), lauryl

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dimethicone/vinyl dimethicone crosspolymers supplied by Shin Etsu (e.g., KSG-41, KSG-42, KSG-43, and KSG-44), lauryl dimethicone/dimethicone copolyol crosspolymers also supplied by Shin-Etsu (e.g., KSG-31, KSG-32, KSG-33, and KSG-34), and Wacker (Belsil RG-100) Additional polymers from Shin-Etsu which are suitable for use in the present invention include KSG-210, -310, 320, 330, and 340. Crosslinked organopolysiloxane polymer gel networks useful in the present invention and processes for making them are further described in U.S. Pat. No. 4,970,252 to Sakuta et al., issued Nov. 13, 1990; U.S. Pat. No. 5,760,116 to Kilgour et al., issued Jun. 2, 1998; U.S. Pat. No. 5,654,362 to Schulz, Jr. et al. issued Aug. 5, 1997; and Japanese Patent Application JP 61-18708, assigned to Pola Kasei Kogyo KK.

Associated Methods

[0115] Applicants have found that the cosmetic kit of the present invention is particularly useful for use as a multi-step facial

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foundation product. It is expected, however, that a skilled artisan is capable of envisioning the appropriate cosmetic benefit agent of those disclosed herein that are commensurate with the method of use being disclosed. The methods of use for the cosmetic kit that is disclosed and claimed herein include, but are not limited to: 1) methods of increasing the substantivity of a cosmetic active to skin; 2) methods of moisturizing skin; 3) methods of improving the natural appearance of skin; 4) methods of applying a color cosmetic to skin; 5) methods of providing antiperspirant efficacy to skin; 6) methods of preventing, retarding, and/or treating wrinkles; 7) methods of providing UV protection to skin; 8) methods of preventing, retarding, and/or controlling the appearance of oil; 9) methods of modifying the feel and texture of skin; 10) methods of providing even skin tone; 11) methods of preventing, retarding, and/or treating the appear of spider vessels and varicose veins; 12) methods of masking the appearance of vellus hair on skin; 13) methods of concealing blemishes and/or imperfections in human skin, including acne, age spots, freckles, moles,

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scars, under eye circles, birth marks, post-inflammatory hyperpigmentation, etc.; and 14) methods of preventing, retarding, and/or treating malodor of a mammal. Each of the methods discussed herein involve sequential topical application of a first and second composition to the skin. Each of the claimed methods may, however, involve additional steps that focus on the use of additional compositions that include other cosmetic benefit agents.

What is claimed is:

Exemplary or Independent Claim(s):

1. A cosmetic kit suitable for application as a multi-step facial foundation product, said kit comprising: a. a first composition that comprises: i. a safe and effective amount of a first cosmetic benefit agent; and ii. a first cosmetically acceptable carrier; and b. a second composition that comprises: i. a safe and effective

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- amount of one or more colorants having a refractive index greater than about 2.0; and ii. a second cosmetically acceptable carrier; wherein said second composition is topically applied to facial skin after said first composition.
15. A cosmetic kit suitable for application as a multi-step cosmetic product, said kit comprising: a. a first composition that comprises: i. a safe and effective amount of a first cosmetic benefit agent; and ii. a first cosmetically acceptable carrier; and b. a second composition that comprises: i. a safe and effective amount of one or more colorants having a refractive index greater than about 2.0; and ii. a second cosmetically acceptable carrier; wherein said second composition is topically applied to skin after said first composition.

Non-exemplary or Dependent Claim(s):

2. The cosmetic kit of claim 1 wherein said first cosmetic benefit agent is selected from the group consisting of absorbents,

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- anti-acne actives, antiperspirant actives, anti-wrinkle actives, artificial tanning agents, astringents, film forming agents, hydrophilic conditioning agents, hydrophobic conditioning agents, light diffusers, desquamating agents, skin lightening agents, skin soothing/healing agents, skin thickeners, sunscreen actives, vitamin compounds, yellowness-reducing particles, redness-reducing particles, and combinations thereof.
3. The cosmetic kit of claim 1 wherein said colorant is selected from the group consisting of zinc oxide, titanium dioxide, iron oxides, guanine, carmine, aluminum powder, ultramarines, bismuth oxychloride, chromium oxide green, chromium hydroxide green, ferric ferrocyanide, manganese violet, titanium dioxide, titanated mica, iron oxide titanated mica, zinc oxide, mica, ferric ammonium ferrocyanide, dihydroxyacetone, guaiaculene, pyrophyllite, bronze powder, copper powder, aluminum stearate, calcium stearate, lactofavin, magnesium stearate, zinc stearate, capsanthin/capsorubin, bentonite, barium sulfate, calcium carbonate, calcium sulfate, carbon

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- black, magnesium carbonate, magnesium silicate, colored silica, chalk, and combinations thereof.

4. The cosmetic kit of claim 1 wherein said first composition further comprises a safe and effective amount of one or more film forming agents.
5. The cosmetic kit of claim 4 wherein said film forming agents are selected from the group consisting of hydrophilic film forming agents, water-dispersible hydrophobic film forming agents, and combinations thereof.
6. The cosmetic kit of claim 1 wherein said second composition further comprises a safe and effective amount of one or more film forming agents.
7. The cosmetic kit of claim 6 wherein said film forming agents are hydrophobic.
8. The cosmetic kit of claim 1 wherein said first composition is essentially free of pigments.
9. The cosmetic kit of claim 1 wherein said first composition is

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oil-in-water emulsion.

10. The cosmetic kit of claim 1 wherein said second composition is a water-in-silicone emulsion.
11. The cosmetic kit of claim 1 wherein said second composition further comprises cosmetic benefit agents selected from the group consisting of absorbents, anti-acne actives, antiperspirant actives, anti-wrinkle actives, artificial tanning agents, astringents, film forming agents, hydrophilic conditioning agents, hydrophobic conditioning agents, light diffusers, desquamating agents, skin lightening agents, skin soothing/healing agents, skin thickeners, sunscreen actives, vitamin compounds, yellowness-reducing particles, redness-reducing particles, and combinations thereof.
12. The cosmetic kit of claim 1 wherein said first and second compositions are in product forms selected from the group consisting of liquids, solid emulsions, creams, lotions, powders, and combinations thereof.
13. The cosmetic kit of claim 1 wherein said kit further comprises

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one or more additional compositions that are sequentially applied after said first and second compositions.

14. The cosmetic kit of claim 1 wherein said first composition, said second composition, or both said first composition and said second composition further comprise a crosslinked silicone polymer and one or more film forming agents.
16. The cosmetic kit of claim 15 wherein said first cosmetic benefit agent is selected from the group consisting of absorbents, anti-acne actives, antiperspirant actives, anti-wrinkle actives, artificial tanning agents, astringents, film forming agents, hydrophilic conditioning agents, hydrophobic conditioning agents, light diffusers, desquamating agents, skin lightening agents, skin thickeners, sunscreen actives, vitamin compounds, yellowness-reducing particles, redness-reducing particles, and combinations thereof.
17. The cosmetic kit of claim 15 wherein said colorant is selected from the group consisting of zinc oxide, titanium dioxide, iron

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oxides, guanine, carmine, aluminum powder, ultramarines, bismuth oxychloride, chromium oxide green, chromium hydroxide green, ferric ferrocyanide, manganese violet, titanium dioxide, titanated mica, iron oxide titanated mica, zinc oxide, mica, ferric ammonium ferrocyanide, dihydroxyacetone, guaiaculene, pyrophyllite, bronze powder, copper powder, aluminum stearate, calcium stearate, lactofavin, magnesium stearate, zinc stearate, capsanthin/capsorubin, bentonite, barium sulfate, calcium carbonate, calcium sulfate, carbon black, magnesium carbonate, magnesium silicate, colored silica, chalk, and combinations thereof.

18. The cosmetic kit of claim 15 wherein said first composition, said second composition, or both said first composition and said second composition further comprise a safe and effective amount of one or more film forming agents.

19. The cosmetic kit of claim 18 wherein said film forming agents are selected from the group consisting of hydrophilic film forming agents, water-dispersible hydrophobic film forming agents, and

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combinations thereof.

20. The cosmetic kit of claim 15 wherein said second composition further comprises cosmetic benefit agents selected from the group consisting of absorbents, anti-acne actives, antiperspirant actives, anti-wrinkle actives, artificial tanning agents, astringents, film forming agents, hydrophilic conditioning agents, hydrophobic conditioning agents, light diffusers, desquamating agents, skin lightening agents, skin soothing/healing agents, skin thickeners, sunscreen actives, vitamin compounds, yellowness-reducing particles, redness-reducing particles, and combinations thereof.

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Derwent Accession: 2001-102983

Utility

C/ Systems comprising organosiloxane resins for delivering oral care substances and for prolonging such delivery;
; SYSTEM INCLUDING DELIVERY COMPOSITION OF ORGANOSILOXANE RESIN, VOLATILE CARRIER CAPABLE OF SOLUBILIZING RESIN, RHEOLOGY MODIFIER AND ORAL CARE SUBSTANCE, AND PROTECTIVE COMPOSITION OF ORGANOSILOXANE RESIN AND SOLUBILIZING VOLATILE CARRIER

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	Publication Number	Kind	Date	Application Number	Filing Date
Main Patent	US 6692727	A	20040217	US 200219031	20020320
PCT	WO 200101942		20010111	WO 2000US18189	20000630
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Priority				WO 99US15130	19990702
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Examiner Field of Search (US): 424049; 424058; 433215; 433216

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International Classification (Edition 1): A61K-007/16; A61K-007/20;
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US 6406683	200206	424064	Drechsler

Cited non-US Patents:

Patent Number	Date YYYYMM	Main US Class	Main IPC

Fulltext Word Count: 8402

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Exemplary or Independent Claim Number(s): 1

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Number of US cited patent references: 17
Number of non-US cited patent references: 1

Abstract:

Disclosed is a system for delivering an oral care substance to the oral cavity comprising: (a) a delivery composition comprised of: (i) an organosiloxane resin; (ii) a volatile carrier capable of solubilizing the organosiloxane resin; (iii) a rheology modifier; and (iv) at least one oral care substance; and (b) a protective composition comprised of: (i) an organosiloxane resin; and (ii) a volatile carrier capable of solubilizing the organosiloxane resin. Further disclosed is a system for delivering an oral care substance to the oral cavity comprising: (a) a delivery composition comprised of: (i) an organosiloxane resin; (ii) a fluid diorganopolysiloxane-based polymer; (iii) a volatile carrier capable of solubilizing the organosiloxane resin and the fluid diorganopolysiloxane-based polymer; (iv) a rheology modifier; and (v) at least one oral care substance; and (b) a protective

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composition comprised of: (i) an organosiloxane resin; and (ii) a volatile carrier capable of solubilizing the organosiloxane resin. The protective composition may further comprise a fluid diorganopolysiloxane-based polymer and/or a rheology modifier. Still further disclosed is a method of using these systems.

Summary of the Invention:**FIELD**

The present invention relates to systems for delivering oral care substances to the surfaces of the teeth and for prolonging such delivery. More specifically, the present invention relates to a system comprising a delivery composition comprising organosiloxane resins and at least one oral care substance for delivering the oral care substance, and a protective composition comprised of organosiloxane resins for prolonging the presence of the delivery composition in the oral cavity. The delivery composition forms a film on the surface to which it has been applied and provides sustained release of the oral care

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substance from the film for prolonged therapeutic, prophylactic, and/or cosmetic benefits. In addition, it is believed that the systems herein may further provide sustained release benefits to other oral surfaces, such as the gingival and mucosal tissues, as well as to the surfaces of the teeth.

BACKGROUND

Oral care products by which various oral care substances or actives can be delivered to the soft and hard tissues of the oral cavity have previously been known. Examples of such oral care products include, for example, brushing aids such as dentifrice products for delivery of anti-caries actives such as fluoride or other actives for the reduction of the bacteria that lead to the formation of plaque, and mouthwashes containing breath freshening actives and/or anti-bacterial actives. In addition, bleaching agents such as peroxide that can be applied directly to the surfaces of the teeth, i.e., to the tooth enamel, have been developed.

However, it has been found that such conventional product forms

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typically do not provide substantivity sufficient to maintain actives on the hard and soft oral tissues for a period of time sufficient to enhance or prolong the therapeutic, prophylactic, and/or cosmetic benefits provided by the actives. Neither have such conventional product forms been able to provide sustained delivery of oral care actives, without periodic reapplication at relatively short time intervals, or without a special delivery device or containment means such as a mouthpiece.

Attempts have previously been made to enhance the substantivity of whitening bleaches, bactericides, and other active components of oral care products. See, e.g., U.S. Pat. No. 5,425,953 to Sintov et al. on Jun. 20, 1995, in which a film forming, water-soluble cellulosic polymer is used to deliver a bleaching agent to the teeth; U.S. Pat. No. 5,438,076 to Friedman et al., in which liquid methacrylate acid copolymer compositions are used to deliver a bactericidal pharmacological agent; and International Patent Appln. No. PCT/CN97/00 to Huang, published on Jul. 24, 1997, disclosing a film-coating composition comprising cellulose and polyvinyl acetal, coumarone-indene resin, or shellac as a film former

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to deliver bleaches to the tooth enamel.

However, the above systems are water-soluble, i.e., they are readily dissolved by saliva, generally within about 1-3 hours after application. Therefore, their degree of durability is low, and they cannot provide long-term delivery of the active ingredient that is present in the composition. In addition, their water-soluble nature precludes them from being used with oral care actives that would be unstable in water-based films. Sodium percarbonate is one example of such an active; it would be unstable in the high pH environment of an aqueous-based film.

In order to provide an applied composition with a relatively higher degree of durability, the use of protective coatings that are applied to the teeth has been described. See, U.S. Pat. No. 5,401,528, to Schmidt on Mar. 18, 1995, in which organically modified silicic acid polycondensates are deposited on the teeth, then polymerized in-situ by curing, to coat the teeth in order to protect them from plaque deposits. This system is not a true delivery system by which an active ingredient is released over time; instead, it provides a barrier by which the deleterious effect of

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plaque-causing bacteria may be diminished.

Although such a barrier coating may offer a benefit in terms of enhanced durability, it requires the use of special equipment and complex application; thus, it cannot be performed at home and cannot be used for self-treatment.

Therefore, it can be seen that none of these previous developments can offer the combination of both long-term delivery of an oral care substance or active ingredient and the convenience of discrete self-treatment and home use. Based on the foregoing, there is a need for a convenient delivery system for various oral care substances in which the substantivity of the active ingredients is enhanced, and in which the presence of the oral care substance in the oral cavity is prolonged to further enhance the therapeutic, prophylactic, and/or cosmetic benefits provided by the actives. None of the existing art provides all of the advantages and benefits of the present invention.

SUMMARY

The present invention is directed to systems for delivering an oral

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care substance to the oral cavity comprising: (a) a delivery composition comprised of: (i) an organosiloxane resin; (ii) a volatile carrier capable of solubilizing the organosiloxane resin; (iii) a rheology modifier; and (iv) at least one oral care substance; and (b) a protective composition comprised of: (i) an organosiloxane resin; and (ii) a volatile carrier capable of solubilizing the organosiloxane resin. The protective composition may further comprise a fluid diorganopolysiloxane-based polymer and/or a rheology modifier.

The present invention is further directed to systems for delivering an oral care substance to the oral cavity comprising: (a) a delivery composition comprised of: (i) an organosiloxane resin; (ii) a fluid diorganopolysiloxane-based polymer; (iii) a volatile carrier capable of solubilizing the organosiloxane resin and the fluid diorganopolysiloxane-based polymer; (iv) a rheology modifier; and (v) at least one oral care substance; and (b) a protective composition comprised of: (i) an organosiloxane resin; and (ii) a

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volatile carrier capable of solubilizing the organosiloxane resin. The protective composition may further comprise a fluid diorganopolysiloxane-based polymer and/or a rheology modifier.

The present invention further is directed to a method of using these systems.

These and other features, aspects, and advantages of the invention will become evident to those skilled in the art from a reading of the present disclosure.

DETAILED DESCRIPTION

While the specification concludes with claims particularly pointing out and distinctly claiming the invention, it is believed that the present invention will be better understood from the following description.

All percentages and ratios used hereinafter are by weight of total composition, unless otherwise indicated.

All measurements referred to herein are made at 25[degree(s)] C. unless otherwise specified.

All percentages, ratios, and levels of ingredients referred to herein

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are based on the actual amount of the ingredient, and do not include solvents, fillers, or other materials with which the ingredient may be combined as a commercially available product, unless otherwise indicated.

All publications, patent applications, and issued patents mentioned herein are hereby incorporated in their entirety by reference. Citation of any reference is not an admission regarding any determination as to its availability as prior art to the claimed invention.

Herein, "comprising" means that other steps and other components which do not affect the end result can be added. This term encompasses the terms "consisting of" and "consisting essentially of."

The delivery systems herein are comprised of a delivery composition and a protective composition. The delivery and protective compositions herein comprise essential components, as well as optional components. The essential and optional components of these compositions of the present invention are described in the following paragraphs.

Delivery Composition

The delivery composition herein is a composition for delivering an oral

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care substance to the oral cavity. The delivery composition comprises an oral care substance for providing a therapeutic, prophylactic, and/or cosmetic benefit to the oral cavity. One preferred embodiment of the delivery composition is comprised of an organosiloxane resin; a volatile carrier capable of solubilizing the organosiloxane resin; a rheology modifier; and at least one oral care substance.

Another preferred embodiment of the delivery composition is comprised of an organosiloxane resin; a fluid diorganopolysiloxane-based polymer; a volatile carrier capable of solubilizing the organosiloxane resin and the fluid diorganopolysiloxane-based polymer; a rheology modifier; and at least one oral care substance.

Protective Composition

The protective composition acts as a protective coating to prolong the presence of the oral care substance or substances contained in the delivery composition in the oral cavity. The protective composition need

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not comprise an oral care substance.

One preferred embodiment of the protective composition is comprised of an organosiloxane resin and a volatile carrier capable of solubilizing the organosiloxane resin. A rheology modifier may also be present.

Another preferred embodiment of the protective composition is comprised of an organosiloxane resin, a fluid

diorganopolysiloxane-based polymer, a volatile carrier capable of solubilizing the organosiloxane resin and the fluid diorganopolysiloxane-based polymer. A rheology modifier may also be present.

The protective composition need not comprise an oral care substance in order to act as a protective coating for the delivery composition. However, it should be noted that any of the oral care substances described herein could additionally be added to the protective composition.

It should also be noted that more than one application of the

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protective composition, following the application of the delivery composition, can be made. Multiple applications of the protective composition can be made and are within the scope of the present invention.

Organosiloxane Resins

Silicone resins are highly crosslinked polymeric siloxane systems. The crosslinking is introduced through the incorporation of tri-functional and tetra-functional silanes with mono-functional or di-functional, or both, silanes during manufacture of the silicone resin. As is well understood in the art, the degree of crosslinking that is required in order to result in a silicone resin will vary according to the specific silane units incorporated into the silicone resin. In general, silicone materials which have a sufficient level of trifunctional and tetrafunctional siloxane monomer units, and hence, a sufficient level of crosslinking, such that they dry down to a rigid, or hard, film are considered to be silicone resins. The ratio of oxygen atoms to silicon atoms is indicative of the

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level of crosslinking in a particular silicone material.
Silicone materials which have at least about 1.1 oxygen atoms per silicon atom will generally be silicone resins herein. Preferably, the ratio of oxygen:silicon atoms is at least about 1.2:1[slashed zero]

Silicone materials and silicone resins in particular can conveniently be identified according to a shorthand nomenclature system well known to those skilled in the art as the "MDTQ" nomenclature. Under this system, the silicone is described according to the presence of various siloxane monomer units which make up the silicone. Briefly, the symbol M denotes the mono-functional unit ($\text{CH}[\text{sub}3]\text{[sub]3}\text{SiO}[\text{sub}0.5]$; D denotes the difunctional unit ($\text{CH}[\text{sub}3]\text{[sub]2}\text{SiO}$; T denotes the trifunctional unit ($\text{CH}[\text{sub}3]\text{SiO}[\text{sub}1.5]$; and Q denotes the quadra- or tetra-functional unit $\text{SiO}[\text{sub}2]$. Note that a small amount, up to about 5% of silanol or alkoxy functionality may also be present in the resin structure as a result of processing.

Primes of the unit symbols, e.g., M', D', T', and Q', denote substituents other than methyl, and must be specifically defined for each

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occurrence. Typical alternate substituents include groups such as vinyl, phenyl, amino, hydroxyl, etc. The molar ratios of the various units, either in terms of subscripts to the symbols indicating the total number of each type of unit in the silicone, or an average thereof, or as specifically indicated ratios in combination with molecular weight, complete the description of the silicone material under the MDTQ system. Higher relative molar amounts of T, Q, T' and/or Q' to D, D', M and/or M' in a silicone resin is indicative of higher levels of crosslinking. As discussed before, however, the overall level of crosslinking can also be indicated by the oxygen to silicon ratio.

The organosiloxane resins are solid at about 25[degree(s)] C. and the average molecular weight of the resins is from about 1,000 to about 10,000. The resins are soluble in organic solvents such as toluene, xylene, isoparaffins, and cyclosiloxanes or the volatile carrier described below, indicating that the resin is not sufficiently crosslinked such that the resin is insoluble in the volatile carrier.

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The silicone resins preferred for use herein are MQ, MT, MTQ, and MDTQ resins; such MQ resins are disclosed in U.S. Pat. No. 5,330,747, Krzysik, issued Jul. 19, 1994. Thus, the preferred silicone substituent is methyl. Especially preferred are MQ resins wherein the M:Q ratio is from about 0.5:1.0 to about 1.5:1[slashed zero] Organosiloxane resins such as these are commercially available, for example, Wacker 803 and 804 available from Wacker Silicones Corporation of Adrian, Mich., US, and G.E. 1170-002 from the General Electric Company.

The level of the resin that is used in the compositions is dependent on its degree of solubility in the formulation, particularly in the solvents used. Generally, the range of resin used in the present invention is from about 5% to about 70%, preferably from about 15% to about 45%, and even more preferably from about 20% to about 40%.

Fluid Diorganopolysiloxane-based Polymers

In addition to the organosiloxane resins disclosed above, the compositions of the present invention may further comprise a fluid

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diorganopolysiloxane-based polymer to be combined with the organosiloxane resins. Said fluid diorganopolysiloxane-based polymers useful in the present invention span a large range of viscosities; from about 10 to about 10,000,000 centistokes (cSt) at 25[degree(s)] C. Some diorganopolysiloxane polymers useful in this invention exhibit viscosities greater than 10,000,000 centistokes (cSt) at 25[degree(s)] C. and therefore are characterized by manufacturer specific penetration testing. Examples of this characterization are GE silicone materials SE 30 and SE 63 with penetration specifications of 500-1500 and 250-600 (tenths of a millimeter) respectively.

Among the fluid diorganopolysiloxane-based polymers of the present invention are diorganopolysiloxane polymers comprising repeating units, where said units correspond to the formula $(R[\subj2]SiO)[\subj{n}]$, where R is a monovalent hydrocarbon radical containing from 1 to 6 carbon atoms, preferably selected from the group consisting of methyl, ethyl, propyl, isopropyl, butyl, isobutyl, t-butyl, amyl, hexyl, vinyl, allyl,

cyclohexyl, amino alkyl, phenyl, fluoroalkyl and mixtures thereof. The

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fluid diorganopolysiloxane polymers employed in the present invention may contain one or more of these hydrocarbon radicals as substituents on the siloxane polymer backbone. The fluid diorganopolysiloxane polymers may be terminated by triorganosilyl groups of the formula (R'¹[sub]3 Si) where R' is a radical selected from the group consisting of monovalent hydrocarbons containing from 1-6 carbon atoms, hydroxyl groups, alkoxy groups and mixtures thereof. The fluid diorganopolysiloxane polymer must be compatible in solution with the organosiloxane resin and the volatile carrier. The term "compatible" refers to the formation of a single phase solution when the fluid diorganopolysiloxane polymer, the organosiloxane resin and the volatile carrier are mixed together in ratios required for a specific formulation. For example, the lower viscosity fluid diorganopolysiloxane polymers (viscosity of about 10 to 100 cSt.) are particularly useful when using ethanol as the principal volatile carrier. For higher viscosity polymers, e.g., poly(dimethylsiloxane), herein referred to as PDMS or silicone gum, having a viscosity of at least 100,000 cSt, volatile

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carriers other than ethanol are preferred.

Silicone gum corresponds to the formula:

(chemical structure - see patent image)

where R is a methyl group.

Fluid diorganopolysiloxane polymers such as these are commercially available, for example, SE 30 silicone gum and SF96 silicone fluid available from the General Electric Company. Similar materials can also be obtained from Dow Corning and from Wacker Silicones.

Another fluid diorganosiloxane-based polymer preferred for use in the present invention is a dimethicone copolyol to modify film forming characteristics as desired. The dimethicone copolyol can be further characterized as polyalkylene oxide modified polydimethylsiloxanes, such as manufactured by the Witco Corporation under the trade name Silwet. Similar materials can be obtained from Dow Corning, Wacker Silicones and Goldschmidt Chemical Corporation as well as other silicone manufacturers.

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In preferred embodiments of the present invention, the ratio of organosiloxane resin to fluid diorganopolysiloxane-based polymer is preferably from about 15:1 to about 1:15, more preferably from about 2:1 to about 8:1, and still more preferably from about 4:1 to about 6:1.

Volatile Carriers

In the present invention, the organosiloxane resin and the fluid diorganosiloxane-based polymer above must be easily transferred to the oral cavity surfaces, such as to the tooth enamel. To achieve

delivery, it is necessary that the resin or the resin/polymer combination above be incorporated into a carrier, specifically a volatile carrier which must quickly volatilize from the oral cavity surfaces, leaving a film on the application surfaces. The volatile carrier must solubilize the organosiloxane resin and if present in the composition, the fluid diorganosiloxane-based polymer.

The volatile carrier comprises from about 10% to about 90%, preferably from about 15% to about 80%, and more preferably from about

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20% to about 70% of the composition. The volatile carrier of the present invention is selected from the group consisting of hydrocarbon oils, volatile silicones, non-hydrocarbon solvents, and mixtures thereof.

Hydrocarbon oils useful in the present invention include those having boiling points in the range of 60-260[degree(s)] C., more preferably hydrocarbon oils having from about C₈ to about C₂₀ chain lengths, most preferably C₈ to C₂₀ isoparaffins. Of these isoparaffins most preferred are selected from the group consisting of isododecane, isohexadecane, isocosane, 2,2,4-trimethylpentane, 2,3-dimethylhexane and mixtures thereof. Most preferred is isododecane, available as, for example, Permethyl 99A from Permethyl Corporation corresponding to the formula:



Preferred volatile silicone fluids include cyclomethicones having 3, 4

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and 5 membered ring structures corresponding to the formula:

(chemical structure - see patent image)

where X is from about 3 to about 6. Such volatile silicones include 244 Fluid, 344 Fluid and 245 Fluid, and 345 Fluid all from Dow Corning Corporation.

The general classes of non-hydrocarbon solvents useful herein include esters, ketones, alcohols, fluorocarbons and fluorocarbon ethers having boiling points in the range of 60 to 200[degree(s)] C. Non-hydrocarbon solvents or mixtures thereof particularly useful include those that are capable of solubilizing the resin and/or the diorganopolysiloxane-based polymer. Such solvents include but are not limited to ethanol, acetone, butanone, ethyl acetate, propyl acetate, amyl acetate, ethyl butyrate, methyl nonafluoroisobutyl ether, methyl nonafluorobutyl ether, and mixtures thereof. These non-hydrocarbon solvents are readily available such as ethyl acetate and methyl ethyl ketone, both supplied by J. T.

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Baker of Phillipsburg, N.J., and HFE (a mixture of methyl nonafluoroisobutyl ether and methyl nonafluorobutyl ether), supplied by

the 3M Company.

Rheology Modifiers

The compositions further comprise a rheology modifier which inhibits settling and separation of components or controls settling in a manner which facilitates re-dispersion and may control rheological flow properties. Suitable rheology modifiers herein include organo modified clays, silicas, polyethylene, and mixtures thereof. The preferred organophilic clays comprise quaternium-18 hectorite or Stearalkonium hectorite, such as Bentone 27 and 38(TM) from Rheox, organoclay dispersion such as Bentone ISD gel(TM); or bentonite organo modified clays such as Bentone 34(TM) from Rheox or the Claytene Series(TM) from Southern Clay Products; and mixtures thereof. The preferred silicas may be fumed silica such as the Aerosil(TM) series from Degussa or the Cab-o-sil(TM) series from Cabot Corporation, silica gels such as the Sylodent(TM) or Sylox(TM) series from W. R. Grace & Co. or precipitated

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silica such as Zeothix 265 from J. M. Huber Corporation.

The rheology modifier is preferably present in the composition at a level of from about 0.1% to about 30%, preferably from about 0.5% to about 10%, and even more preferably about 1% to about 3% of the composition.

Oral Care Substances

The oral care substance preferably contains an active at a level where upon directed use, the benefit sought by the wearer is promoted without detriment to the oral surface to which it is applied. Examples of the oral conditions these actives address include, but, are not limited to, appearance and structural changes to teeth, whitening, stain bleaching, stain removal, plaque removal, tartar removal, cavity prevention and treatment, inflamed and/or bleeding gums, mucosal wounds, lesions, ulcers, aphthous ulcers, cold sores, tooth abscesses, and the elimination of mouth malodor resulting from the conditions above and other causes such as microbial proliferation.

Suitable oral care substances include any material that is generally

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considered safe for use in the oral cavity and that provides changes to the overall appearance and/or health of the oral cavity. The level of oral care substance in the compositions of the present invention is generally, unless specifically noted, from about 0.01% to about 50%, preferably from about 0.1% to about 20%, more preferably from about 0.5% to about 10%, and even more preferably from about 1% to about 7%, by weight of the composition.

Oral care compositions or substances of the present invention may include many of the actives previously disclosed in the art. The following is a non-limiting list of oral care actives that may be used in the present invention.

1. Teeth Whitening Actives

Teeth whitening actives may be included in the oral care substance of the present invention. The actives suitable for whitening are selected from the group consisting of the peroxides, metal chlorites, perborates, percarbonates, peroxyacids, persulfates, and combinations thereof. Suitable peroxide compounds include hydrogen peroxide, urea peroxide,

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calcium peroxide, carbamide peroxide, and mixtures thereof. Most preferred is carbamide peroxide. Suitable metal chlorites include calcium chlorite, barium chlorite, magnesium chlorite, lithium chlorite, sodium chlorite, and potassium chlorite. Additional whitening actives may be hypochlorite and chlorine dioxide. The preferred chlorite is sodium chlorite. A preferred percarbonate is sodium percarbonate. Preferred persulfates are xones.

2. Anti-tartar Agents

Anti-tartar agents known for use in dental care products include phosphates. Phosphates include pyrophosphates, polyphosphates, polyphosphonates and mixtures thereof. Pyrophosphates are among the best known for use in dental care products. Pyrophosphate and polyphosphate ions are delivered to the teeth derive from pyrophosphate polyphosphate salts. The pyrophosphate salts useful in the present compositions include the dialkali metal pyrophosphate salts, tetra-alkali metal pyrophosphate salts, and mixtures thereof. Disodium dihydrogen pyrophosphate (Na₂H₂P₂O₇), tetrasodium pyrophosphate (Na₄P₂O₇)

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O₇), and tetrapotassium pyrophosphate (K₄P₂O₇) in their unhydrated as well as hydrated forms are the preferred species. While any of the above mentioned pyrophosphate salts may be used, tetrasodium pyrophosphate salt is preferred. Sodium polyphosphate and triethanolamine polyphosphates, for example, are preferred.

The pyrophosphate salts are described in more detail in Kirk & Othmer, Encyclopedia of Chemical Technology, Third Edition, Volume 17, Wiley-Interscience Publishers (1982). Additional anticalculus agents include pyrophosphates or polyphosphates disclosed in U.S. Pat. No. 4,590,066 issued to Parran & Sakkab on May 20, 1986; polyacrylates and other polycarboxylates such as those disclosed in U.S. Pat. No. 3,429,963 issued to Shedlovsky on Feb. 25, 1969 and U.S. Pat. No. 4,304,766 issued to Chang on Dec. 8, 1981; and U.S. Pat. No. 4,661,341 issued to Benedict & Sunberg on Apr. 28, 1987; polyepoxysuccinates such as those disclosed in U.S. Pat. No. 4,846,650 issued to Benedict, Bush & Sunberg on Jul. 11, 1989; ethylenediaminetetraacetic acid as disclosed in British Patent No. 490,384 dated Feb. 15, 1937; nitrilotriacetic acid and related compounds

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as disclosed in U.S. Pat. No. 3,678,154 issued to Widder & Briner on Jul. 18, 1972; polyphosphonates as disclosed in U.S. Pat. No. 3,737,533 issued to Francis on Jun. 5, 1973, U.S. Pat. No. 3,988,443 issued to Ploger, Schmidt-Dunker & Gloxhuber on Oct. 26, 1976 and U.S. Pat. No. 4,877,603 issued to Degenhardt & Kozikowski on Oct. 31, 1989. Anticalculus phosphates include potassium and sodium pyrophosphates; sodium tripolyphosphate; diphosphonates, such as ethane-1-hydroxy-1,1-diphosphonate, 1-azacycloheptane-1,1-diphosphonate, and linear alkyl diphosphonates; linear carboxylic acids; and sodium zinc citrate.

Agents that may be used in place of or in combination with the

pyrophosphate salt include such known materials as synthetic anionic polymers including polyacrylates and copolymers of maleic anhydride or acid and methyl vinyl ether (e.g., Gantrez), as described, for example, in U.S. Pat. No. 4,627,977, to Gaffar et al.; as well as, e.g., polyamino propoano sulfonic acid (AMPS), zinc citrate trihydrate, polyphosphates (e.g., tripolyphosphate; hexametaphosphate), diphosphonates (e.g., EHDP;

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AHP), polypeptides (such as polyaspartic and polyglutamic acids), and mixtures thereof.

3. Fluoride Ion Source

Fluoride ion sources are well known for use in oral care compositions as anticaries agents. Fluoride ions are contained in a number of oral care compositions for this purpose, particularly toothpastes. Patents disclosing such toothpastes include U.S. Pat. No. 3,538,230, Nov. 3, 1970 to Pader et al; U.S. Pat. No. 3,689,637, Sep. 5, 1972 to Pader; U.S. Pat. No. 3,711,604, Jan. 16, 1973 to Colodney et al; U.S. Pat. No. 3,911,104, Oct. 7, 1975 to Harrison; U.S. Pat. No. 3,935,306, Jan. 27, 1976 to Roberts et al; and U.S. Pat. No. 4,040,858, Aug. 9, 1977 to Wason.

Application of fluoride ions to dental enamel serves to protect teeth against decay. A wide variety of fluoride ion-yielding materials can be employed as sources of soluble fluoride in the instant compositions. Examples of suitable fluoride ion-yielding materials are found in Briner et al; U.S. Pat. No. 3,535,421; issued Oct. 20, 1970 and Widder et al; U.S. Pat. No. 3,678,154; issued Jul. 18, 1972. Preferred fluoride ion

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sources for use herein include sodium fluoride, potassium fluoride and ammonium fluoride. Sodium fluoride is particularly preferred. Preferably the instant compositions provide from about 50 ppm to 10,000 ppm, more preferably from about 100 to 3000 ppm, of fluoride ions in the compositions that contact dental surfaces when used with the delivery system of the present invention.

4. Anti-microbial Agents

Anti-microbial agents can also be present in the oral care compositions or substances of the present invention. Such agents may include, but are not limited to, 5-chloro-2-(2,4-dichlorophenoxy)-phenol, commonly referred to as triclosan, and described in The Merck Index, 11th ed. (1989), pp. 1529 (entry no. 9573) in U.S. Pat. No. 3,506,720, and in European Patent Application No. 0,251,591 of Beecham Group, PLC, published Jan. 7, 1988; phthalic acid and its salts including, but not limited to those disclosed in U.S. Pat. No. 4,994,262, Feb. 19, 1991, preferably magnesium monopotassium phthalate; chlorhexidine (Merck Index, no. 2090), alexidine (Merck Index, no. 222; hexetidine (Merck Index, no.

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4624); sanguinarine (Merck Index, no. 8320); benzalkonium chloride (Merck Index, no. 1066); salicylanilide (Merck Index, no. 8299); domiphen bromide (Merck Index, no. 3411); cetylpyridinium chloride (CPC) (Merck Index, no. 2024; tetradecylpyridinium chloride (TPC);

N-tetradecyl-4-ethylpyridinium chloride (TDEPC); octenidine; delmopinol, octapinol, and other piperidine derivatives; nicin preparations; zinc/stannous ion agents; antibiotics such as augmentin, amoxicillin, tetracycline, doxycycline, minocycline, and metronidazole; and analogs and salts of the above; essential oils including thymol, geraniol, carvacrol, citral, hinokitiol, eucalyptol, catechol (particularly 4-allyl catechol) and mixtures thereof; methyl salicylate; hydrogen peroxide; metal salts of chlorite and mixtures of all of the above.

5. Anti-inflammatory Agents

Anti-inflammatory agents can also be present in the oral care compositions or substances of the present invention. Such agents may include, but are not limited to, non-steroidal anti-inflammatory agents or NSAIDs such as ketorolac, flurbiprofen, ibuprofen, naproxen,

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indometacin, aspirin, ketoprofen, piroxicam and meclofenamic acid. Use of NSAIDs such as Ketorolac are claimed in U.S. Pat. No. 5,626,838, issued May 6, 1997. Disclosed therein are methods of preventing and, or treating primary and reoccurring squamous cell carcinoma of the oral cavity or oropharynx by topical administration to the oral cavity or oropharynx an effective amount of an NSAID.

6. Nutrients

Nutrients may improve the condition of the oral cavity and can be included in the oral care compositions or substances of the present invention. Nutrients include minerals, vitamins, oral nutritional supplements, enteral nutritional supplements, and mixtures thereof.

Minerals that can be included with the compositions of the present invention include calcium, phosphorus, fluoride, zinc, manganese, potassium and mixtures thereof. These minerals are disclosed in Drug Facts and Comparisons (loose leaf drug information service), Wolters Kluer Company, St. Louis, Mo., (C)1997, pp10-17.

Vitamins can be included with minerals or used separately. Vitamins

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include Vitamins C and D, thiamine, riboflavin, calcium pantothenate, niacin, folic acid, nicotinamide, pyridoxine, cyanocobalamin, para-aminobenzoic acid, bioflavonoids, and mixtures thereof. Such vitamins are disclosed in Drug Facts and Comparisons (loose leaf drug information service), Wolters Kluer Company, St. Louis, Mo., (C)1997, pp. 3-10.

Oral nutritional supplements include amino acids, lipotropics, fish oil, and mixtures thereof, as disclosed in Drug Facts and Comparisons (loose leaf drug information service), Wolters Kluer Company, St. Louis, Mo., (C)1997, pp. 54-54e. Amino acids include, but, are not limited to L-Tryptophan, L-Lysine, Methionine, Threonine, Levocarnitine or L-carnitine and mixtures thereof. Lipotropics include, but, are not limited to choline, inositol, betaine, linoleic acid, linolenic acid, and mixtures thereof. Fish oil contains large amounts of Omega-3 (N-3) Polyunsaturated fatty acids, eicosapentaenoic acid and docosahexanoic acid.

Enteral nutritional supplements include, but, are not limited to

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protein products, glucose polymers, corn oil, safflower oil, medium chain triglycerides as disclosed in Drug Facts and Comparisons (loose leaf drug information service), Wolters Kluer Company, St. Louis, Mo., (C)1997, pp. 55-57.

7. Mouth and Throat Products

Other materials that can be used with the present invention include commonly known mouth and throat products. Such products are disclosed in Drug Facts and Comparisons (loose leaf drug information service), Wolters Kluer Company, St. Louis, Mo., (C)1997, pp. 520b-527. These products include, but are not limited to anti-fungal, antibiotic and analgesic agents.

8. Antioxidants

Antioxidants are generally recognized as useful in compositions such as those of the present invention. Antioxidants are disclosed in texts such as Cadenas and Packer, The Handbook of Antioxidants, (C) 1996 by Marcel Dekker, Inc. Antioxidants that may be included in the oral care composition or substance of the present invention include, but are not

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limited to Vitamin E, ascorbic acid, Uric acid, carotenoids, Vitamin A, flavonoids and polyphenols, herbal antioxidants, melatonin, aminoindoles, lipoic acids and mixtures thereof.

9. H-2 Antagonists

Histamine-2 (H-2 or H2) receptor antagonist compounds (H-2 antagonists) may be used in the oral care composition of the present invention. As used herein, selective H-2 antagonists are compounds that block H-2 receptors, but do not have meaningful activity in blocking histamine-1 (H-1 or H1) receptors. Selective H-2 antagonists stimulates the contraction of smooth muscle from various organs, such as the gut and bronchi; this effect can be suppressed by low concentrations of mepyramine—a typical antihistaminic drug. The pharmacological receptors involved in these mepyramine-sensitive histamine responses have been defined as H-1 receptors (Ash, A. S. F. & H. O. Schild, Brit. J. Pharmacol. Chemother., Vol. 27 (1966), p. 427. Histamine also stimulates the secretion of acid by the stomach (Loew, E. R. & O. Chickering, Proc. Soc. Exp. Biol. Med., Vol. 48 (1941), p. 65), increases the heart rate

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(Trendelenburg, U., J. Pharmacol., Vol. 130 (1960), p. 450), and inhibits contractions in the rat uterus (Dews, P. B. & J. D. P. Graham, Brit. J. Pharmacol. Chemother., Vol. 1 (1946), p. 278); these actions cannot be antagonized by mepyramine and related drugs. The H-2 antagonists useful in the oral care compositions or substances are those that blockade the receptors involved in mepyramine-insensitive, non-H-1 (H-2), histamine responses, and do not blockade the receptors involved in mepyramine-sensitive histamine responses.

Selective H-2 antagonists are those compounds found to be H-2 antagonists through their performance in classical preclinical screening tests for H-2 antagonist function. Selective H-2 antagonists are identified as compounds which can be demonstrated to function as competitive or non-competitive inhibitors of histamine-mediated effects

in those screening models specifically dependent upon H-2 receptor function, but to lack significant histamine antagonist activity in those screening models dependent upon H-1 receptor function. Specifically, this includes compounds that would be classified as described by Black, J. W.,

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W. A. M. Duncan, C. J. Durant, C. R. Ganellin & E. M. Parsons, "Definition and Antagonism of Histamine H2-Receptors", *Nature*, Vol. 236 (Apr. 21, 1972), pp. 385-390 (Black), as H-2 antagonists if assessed as described by Black through testing with the guinea pig spontaneously beating right atria *in vitro* assay and the rat gastric acid secretion *in vivo* assay, but shown to lack in significant H-1 antagonist activity relative to H-2 antagonist activity, if assessed as described by Black with either the guinea pig ileum contraction *in vitro* assay or the rat stomach muscle contraction *in vivo* assay. Preferably selective H-2 antagonists demonstrate no significant H-1 activity at reasonable dosage levels in the above H-1 assays. Typical reasonable dosage level is the lowest dosage level at which 90% inhibition of histamine, preferably 99% inhibition of histamine, is achieved in the above H-2 assays.

Selective H-2 antagonists include compounds meeting the above criteria which are disclosed in U.S. Pat. Nos. 5,294,433 and 5,364,616 Singer et al., issued Mar. 15, 1994 and Nov. 15, 1994 respectively and assigned to Procter & Gamble, wherein the selective H-2 antagonist is selected from

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the group consisting of cimetidine, etintidine, ranitidine, ICIA-5165, tiotidine, ORF-17578, lupitidine, donetidine, famotidine, roxatidine, pifatidine, lamtidine, BL-6548, BMY-25271, zaltidine, nizatidine, mifentidine, BMY-52368 (SKF-94482), BL-6341A, ICI-162846, ramixotidine, Wy-45727, SR-58042, BMY-25405, loxatidine, DA4634, bisfentidine, sufotidine, ebrotidine, HE-30-256, D-16637, FRG-8813, FRG-8701, impropidine, L-643728, and HB-408. 4. Particularly preferred is cimetidine (SKF-92334), N-cyano-N'-methyl-N''-(2-(((5-methyl-1H-imidazol-4-yl)methyl)thio)ethyl)guanidine:

(chemical structure - see patent image)

Cimetidine is also disclosed in the Merck Index, 11th edition (1989), p. 354 (entry no. 2279), and Physicians' Desk Reference, 46th edition (1992), p. 2228. Related preferred H-2 antagonists include burimamide and metiamide.

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10. Analgesic Actives

Anti-pain or desensitizing agents can also be present in the oral care compositions or substances of the present invention. Such agents may include, but are not limited to, strontium chloride, potassium nitrate, natural herbs such as gall nut, Asarum, Cubebin, Galanga, scutellaria, Liangmianzhen, Baizhi, etc.

11. Anti-viral Actives

Antiviral actives useful in the present composition include any known actives that are routinely used to treat viral infections. Such anti-viral actives are disclosed in Drug Facts and Comparisons (loose leaf drug information service), Wolters Kluwer Company, St. Louis, Mo., (C)1997, pp. 402(a)-407(z), incorporated herein by reference in its entirety. Specific examples include anti-viral actives disclosed in U.S. Pat. No. 5,747,070, issued May 5, 1998 to Satyanarayana Majeti, incorporated herein by reference in its entirety. Said Patent discloses the use of stannous salts to control viruses. Stannous salts and other anti-viral actives are described in detail in Kirk & Othmer, Encyclopedia of Chemical

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Technology, Third Edition, Volume 23, Wiley-Interscience Publishers (1982), pp. 42-71, incorporated herein by reference in its entirety. The stannous salts that may be used in the present invention would include organic stannous carboxylates and inorganic stannous halides. While stannous fluoride may be used, it is typically used only in combination with another stannous halide or one or more stannous carboxylates or another therapeutic agent.

12. Other Ingredients

In addition to the above materials of the composition of the present invention, a number of other components may desirably be added to the oral care substance. Additional components include, but are not limited to, flavoring agents, sweetening agents, xylitol, opacifiers, coloring agents, surfactants, and chelants such as ethylenediaminetetraacetic acid. Suitable flavoring agents include, but are not limited to, oil of peppermint, oil of sassafras, clove bud oil, peppermint, menthol, anethole, thymol, methyl salicylate, eucalyptol, cassia, 1-menthyl acetate, sage, eugenol, parsley oil, oxanone, oil of wintergreen,

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alpha-irisone, oil of spearmint, marjoram, lemon, orange, propenyl quathol, cinnamon, and mixtures thereof.

Pigments may also be added to the compositions herein to more precisely indicate the locations at which the composition has actually been applied, allowing the user to apply the composition more thoroughly or evenly. However, such pigments are not intended to mask stains that may exist on the tooth surfaces.

These additional ingredients can also be used in place of the compounds disclosed above.

What is claimed is:

Exemplary or Independent Claim(s):

1. A system for delivering an oral care substance to the oral cavity comprising: a) a delivery composition comprised of: i) an organosiloxane resin; ii) a volatile carrier capable of solubilizing the organosiloxane resin; iii) a rheology modifier; iv) and at least one oral care substance; and b) a protective composition

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comprised of: i) an organosiloxane resin; and ii) a volatile carrier capable of solubilizing the organosiloxane resin.

Non-exemplary or Dependent Claim(s):

2. The system of claim 1 wherein the protective composition further comprises a fluid diorganopolysiloxane-based polymer.
3. The system of claim 1 wherein the protective composition further comprises a rheology modifier.
4. The system of claim 1 wherein the organosiloxane resin in the delivery and protective compositions is present at a level of from about 5% to about 70%.
5. The system of claim 4 wherein the organosiloxane resin is selected from the group consisting of $(CH_{sub}3)_{sub}3 SiO_{sub}0.5 "M" units$, $(CH_{sub}3)_{sub}2 SiO "D" units$, $(CH_{sub}3)SiO_{sub}1.5 "T" units$, $SiO_{sub}2 "Q" units$, and mixtures thereof.
6. The system of claim 5 wherein the organosiloxane resin is comprised of MQ units, wherein the M:Q ratio is from about 0.5:1.0 to about

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7. The system of claim 1 wherein the volatile carrier in the delivery and protective compositions is selected from the group consisting of hydrocarbon oils, volatile silicones, non-hydrocarbon solvents, and mixtures thereof.
8. The system of claim 7 wherein the volatile carrier is selected from the group consisting of ethanol, isododecane, butanone, ethyl acetate, propyl acetate, methyl nonafluorobutyl ether, methyl nonafluorobutyl ether and mixtures thereof.
9. The system of claim 1 wherein the oral care substance in the delivery composition includes at least one oral care active selected from the group consisting of a teeth whitening active, an anti-tartar agent, a fluoride ion source, an anti-microbial agent, an anti-inflammatory agent, one or more nutrients, a mouth and throat product, an antioxidant, an H2 antagonist, an analgesic active, an anti-viral agent, flavoring agents, sweetening agents, xylitol, opacifiers, coloring agents, chelants, surfactants, pigments, and mixtures

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thereof.

10. The system of claim 9 wherein the oral care substance comprises from about 0.01% to about 50% of the delivery composition.
11. The system of claim 10 wherein the oral care substance is a teeth whitening active selected from the group consisting peroxides, metal chlorites, perborates, percarbonates, peroxyacids, persulfates, and mixtures thereof.
12. The system of claim 3 wherein the rheology modifier in the delivery and protective compositions is selected from the group consisting of organo modified clays, silicas, polyethylene, and mixtures thereof.
13. The system of claim 12 wherein the rheology modifier is present in the delivery and protective compositions at a level of from about 0.1% to about 30%.
14. A system for delivering an oral care substance to the oral cavity comprising: a) a delivery composition comprised of: i) an

organosiloxane resin; ii) a fluid diorganopolysiloxane-based polymer; iii) a volatile carrier capable of solubilizing the

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organosiloxane resin and the fluid diorganopolysiloxane-based polymer; iv) a rheology modifier; and v) at least one oral care substance; and b) a protective composition comprised of: i) an organosiloxane resin; and ii) a volatile carrier capable of solubilizing the organosiloxane resin.

15. The system of claim 14 wherein the protective composition further comprises a fluid diorganopolysiloxane-based polymer.
16. The system of claim 14 wherein the fluid diorganopolysiloxane-based polymer in the delivery and protective compositions comprises repeating units of the formula $(R[sub]2SiO)[sub]n$, where R is a monovalent hydrocarbon radical group containing from 1 to 6 carbon atoms.
17. The system of claim 16 wherein said hydrocarbon radical group is selected from the group consisting of methyl, ethyl, propyl, isopropyl, butyl, isobutyl, t-butyl, amyl, hexyl, vinyl, allyl, cyclohexyl, amino alkyl, phenyl, fluoroalkyl and mixtures thereof.
18. The system of claim 17 wherein the fluid diorganopolysiloxane-based

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polymer is terminated by triorganosilyl groups of the formula $(R'[sub]3Si)$ where R' is a monovalent hydrocarbon radical selected from the group consisting of 1 to 6 carbon atoms, hydroxyl groups, alkoxy groups and mixtures thereof.

19. The system of claim 18 wherein the fluid diorganopolysiloxane-based polymer is poly(dimethylsiloxane).
20. The system of claim 14 wherein the ratio of organosiloxane resin to fluid diorganopolysiloxane-based polymer in the delivery and protective compositions is from about 15:1 to about 1:15.
21. The system of claim 14 wherein the volatile carrier in the delivery and protective compositions is selected from the group consisting of hydrocarbon oils, volatile silicones, non-hydrocarbon solvents, and mixtures thereof.
22. The system of claim 21 wherein the volatile carrier is selected from the group consisting of ethanol, isododecane, butanone, ethyl acetate, propyl acetate, methyl nonafluorobutyl ether, methyl nonafluorobutyl ether and mixtures thereof.

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23. The system of claim 14 wherein the oral care substance in the delivery composition includes at least one oral care active selected from the group consisting of a teeth whitening active, an anti-tartar agent, a fluoride ion source, an anti-microbial agent, an anti-inflammatory agent, one or more nutrients, a mouth and throat product, an antioxidant, an H2 antagonist, an analgesic active, an anti-viral agent, flavoring agents, sweetening agents, xylitol, opacifiers, coloring agents, chelants, surfactants, pigments, and

mixtures thereof.

24. The system of claim 23 wherein the oral care active comprises from about 0.01% to about 50% of the delivery composition.
25. The system of claim 24 wherein the oral care active is a teeth whitening active selected from the group consisting peroxides, metal chlorites, perborates, percarbonates, peroxyacids, persulfates, and mixtures thereof.
26. The system of claim 14 wherein the protective composition further comprises a rheology modifier.

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27. The system of claim 26 wherein the rheology modifier in the delivery and protective compositions is selected from the group consisting of organo modified clays, silicas, polyethylene, and mixtures thereof.
28. The system of claim 27 wherein the rheology modifier is present in the delivery an protective compositions at a level of from about 0.1% to about 30%.
29. A method for delivering an oral care substance to at least one surface of the oral cavity, comprising the steps of: (1) applying the delivery composition of either of claim 1 or claim 14 to the surface(s) of the oral cavity; (2) allowing the composition to form a film on the surface(s) of the oral cavity; and (3) applying the protective composition of claim 1 to the surface(s) of the oral cavity.
30. The method of claim 29 wherein the delivery composition comprises a teeth whitening active and the oral cavity surface to which the composition is applied is the enamel of the teeth.

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